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MODELS FOR DERIVING CULTURAL INFORMATION FROM STONE TOOLS

by

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A THESIS

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ABSTRACT

The question of how prehistoric cultural systems can be isolated in time, using lithic remains as a data base is examined. It is argued that existing morphological taxonomic approaches are inadequate for such purposes, as the units of analysis have not been created in a systematic manner (see Dunnell 1971:23-26 on systematics). These units are not based on a stated theory or derived from a known logical system; consequently morphological taxonomic analytic systems will have little utility in explaining assemblage variability in light of such fundamental processual questions as migration, diffusion, in situ development, trade and different aspects of a seasonal round of activities.

An attempt is made to overcome the above definitional problems by advancing an etic systemic cognitive model which postulates that there are underlying structures in the human mind which are organized in a series of levels in a hierarchically-structured flow model.

These underlying structures provide a media in which tool making information is processed and decisions are made concerning tool production. It is postulated that lithic craftsmen made decisions on at least four levels which are also reflected on finished artifacts by distinctly different kinds of attributes. The four levels which require decision-making on the part of the tool maker are: (1) decisions regarding kinds of material; (2) decisions regarding the input variables necessary to induce a desired kind of fracture; (3) decisions regarding microstructure or the spacing between constructional units, and (4) de-

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cisions regarding macrostructure or outline form perimeters.

It is the quality of structured levels of attributes which occur on stone implements, in all lithic assemblages, which makes it possible to develop a classification system which has universal application. A classification procedure is outlined in the study which is directed toward the end of classifying decision model types used in the creation of artifacts.

The cognition process involved in the four levels of decision-making are not synonymous and this factor must be kept in mind while reconstructing decision model types. Level 1 is an additive process where materials are brought together. A number of methods are available which can be used in the identification of materials. The second cognitive level is a synthetic process in which the input variables of force, impactor and holding position are articulated with material and shape to bring about a desired transformation. In attempting to understand this interface between cognition and materials it is important to have an understanding of material properties and of the underlying theories thought to govern fracture morphology, here postulated to be the Griffith Crack Theory and wave mechanics.

The question is raised as to whether or not the input conditions or decision sets responsible for the creation of a fracture surface can be reconstructed for classification purposes. A dynamic loading device, the "stainless steel Indian", was constructed for the purpose of conducting a series of controlled experiments in which output morphology could be interpreted in light in input conditions. An analysis of the experimental data suggests that an experimental particularis-

tic approach in which specific input conditions are related to particular output features is a plausible avenue of research for developing an inferential framework so that probablistic statements can eventually be made concerning decisions in the second level.

The third and fourth levels of decision-making are subtractive in nature and are considerably easier to reconstruct than the second level.

Projectile points from four Clovis localities: Anzick, Simon, Murray Springs and Blackwater Draw are defined in terms of the third and fourth levels of decision-making. The decision model types are used to examplify how cross-level patterning which exists in decision model types can be used to resolve processual questions in making inter-assemblage comparisons.

PREFACE

There are a number of historical circumstances which prompted me to investigate the theoretical underpinnings on which prehistorians base their inferential analyses of stone tools. Alberta archaeology is relatively unknown and publications are rare. Wormington and Forbis' handbook, An Introduction to the Archaeology of Alberta (1965) is today still the most important summary of the area. It is significant as it set a precedent as to what constitutes diagnostic data. Projectile points are emphasized with almost total exclusion of other categories of material remains.

As a product of first-hand experience with artifact collections in the three major biotic zones in the province: the plains, parklands and boreal forest, it is clear that a skewed picture is presented in this initial pioneer effort. Although exceptions exist, most artifact assemblages are constituted of more than 90 per cent quartzite cobble and pebble tools with a very small percentage of associated projectile points. In other words, cobble and pebble tools have been excluded from consideration, although they are the most dominant kind of artifact, in favor of concentrating on diagnostic projectile points.

There are good reasons why cobble and pebble implements are excluded from consideration. The practical analytic problems of constructing a meaningful classification for cobble and pebble tools were driven home to me when I attempted to classify several hundred cobble implements from the Caribou Island site, GbOs100, located near Bonnyville, Alberta (Bryan and Bonnichsen, 1966). In this study arti-

fact types were defined in terms of a traditional approach which is based on geometric descriptive attributes which relate to outline form. Difficulty was immediately encountered as many of the amorphous cobble tools did not readily lend themselves to this kind of analysis.

Subsequently, when I initiated the Cypress Hills archaeological project in southeastern Alberta, over one hundred archaeological sites were located. Ten of these were excavated and approximately three thousand artifacts were recovered. Only about forty of the tools are projectile points. As I was to use this data for thesis material, I was forced into the decision of trying to do something meaningful with cobble tool assemblages. Realizing as a result of the Caribou Island experience that traditional taxonomies did not hold the answers, arrangements were made to study with Don Crabtree during the academic year of 1967 and 1968 for the purpose of gaining insight into the technological operation used in producing stone implements. The experience with Don Crabtree did not provide an immediate answer to my cobble tool classification problem as I had hoped. However, the technical expertise required to produce tools at will fostered the development of an independent analytic viewpoint, divorced from the existing literature regarding tool production system. As this viewpoint developed with ongoing practical experiments, theoretical and methodological difficulties which typify contemporary analytic models gradually began to emerge. Consequently I have set my cobble tools aside for the time being so as to devote my full attention to the task of developing a theoretical framework which can overcome some of the existing typological problems as well as have the power to cope with amorphous cobble tool assemblage. In the pre-

sent study I attempt to explicate how my viewpoint is at variance with other analytic models.

ACKNOWLEDGEMENTS

The dissertation presented in the following pages has been several years in the making. After having weathered an undirected, chaotic academic program with four departmental chairmen, two associate chairmen and at least three degree programs during the first years of graduate school I would first like to extend my thanks to the taxpayers of Alberta for their continued financial support. The present study developed as a spin-off product from a much larger cultural-ecological program, originally undertaken for thesis material on the archaeology of the Cypress Hills of Alberta.

It became clear when I attempted to analyze the 3,000 or so cobble artifacts from ninety surface sites and ten excavated sites that contemporary analytic procedures are inadequate for deriving cultural information from stone tools. Dr. Alan Bryan recognized the difficulties of the problem with which I was confronted. He made arrangements on my behalf to spend a year studying with the master tool maker, Don Crabtree, from Kimberly, Idaho. Mr. Crabtree generously agreed to work with me during the academic year of 1968 and 1969 without financial remuneration. I will forever be grateful to Don Crabtree, whose knowledge stimulated a gradual transformation in my perceptual patterns regarding material culture, which is the basis for discussion in the present study.

When H.T. Lewis became Chairman of the Department of Anthropology in 1971 the fires of political unrest returned to a smoulder

and the faculty began to return their attention to student problems. My sincere thanks are extended to Professor Lewis for his quelling and fair approach, for without his guiding hand in the background I would have found it impossible to continue my work at the University of Alberta.

With the arrival of new staff members in 1971 and 1972 and with Professor Lewis at the helm, a graduate degree program gradually began to take shape. With Alan Bryan as chairman and a committee of four: David Young, Clifford Hickey and Ruth Gruhn from the Department of Anthropology and Dr. John Westgate from the Department of Geology, my academic progress was greatly accelerated when a channel for communication was finally opened.

However, even after a year of work with my committee a very large communication gap still existed. It was David Young who first grasped the theoretical orientation I was trying to get across, which was admittedly rather "fuzzy" in my own mind at that time. He has worked closely with me and has contributed a great deal at both the conceptual and organizational levels, which has led to the formulation of a substantially better study than would have otherwise been possible. My sincere thanks and admiration are extended to David Young, who has taught me a great deal about thinking and student-professor interaction patterns by example.

Also, I wish to thank Dr. Bryan, who has stood behind me from the beginning, and who has argued many times on my behalf for continued funding. Furthermore, I am truly grateful for Dr. Bryan's liberal academic attitude as I was not forced to write the traditional cultural-historical Ph.D. dissertation.

The feedback and editorial comments offered during the various stages of research from the distinctly different viewpoints of Dr. Gruhn, Mr. Hickey and Dr. Westgate have, without question, increased the clarity of the following presentation. To them I extend my hearty thanks for their efforts.

A number of individuals have unselfishly provided me with technical guidance and assistance. The most outstanding contributions have been made by Dr. David Cruden of the Geology and Civil Engineering Departments, who has discussed rock fracture problems with me and who provided me with some guidance into the rock mechanic literature. Dr. Bellows of the Department of Mechanical Engineering and Earl Eichenlaub at the University of Alberta Technical Service Machine Shop clarified problems associated with constructing a rock cracking machine and associated instrumentation problems.

Carl Solomon, Department of Geology technician, worked closely with me during the early stages of the project. He did an admirable job of keeping public relations in order with senior staff members in the Geology Department while we employed the three diamond rock saws in the basement of the Geology Department preparing specimens.

Also, I would like to extend my thanks to the Canadian government for a Local Initiative Grant which provided the salaries of three assistants: Skip Reeves, Richard Baker and Peter Déranger. In particular Skip Reeves should be given honorable mention as he spent three boring months preparing rock specimens for the project, as well as keeping the geology rock saws in good order. Also, Richard Baker greatly assisted implementing the fracture experiments which are reported on here.

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Others who have made substantial contributions to the study: My sincere thanks are extended to Stuart Baldwin, who donated two weeks of his time helping code output variables. Carolynne Poon, artist, created a number of illustrations which accompany Chapter V. Mrs. H. Taylor deserves honorable mention as she patiently persevered throughout the writing stages of the project ordering my scratchy handwriting. During the recent lean years in graduate school my father-in-law, Kenyon Follett, has provided considerable assistance for which I extend my sincere thanks. Last but not least, my wife Ann deserves a gold medal for tolerating my battle with books and pencils during the last years as I attempted to complete the idealistic study I had undertaken.

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CHAPTER I

INTRODUCTION

The present work is primarily devoted to the investigation of a single question--how can prehistoric cultural systems be isolated in time and space, using lithic remains as a data base? The emphasis of the study is placed on defining a systematic framework which can be used to interpret tool making patterns anywhere in the world. The common denominator which underlies the production of all stone tools is the decision-making process used by creative artists in performing their craft.

An etic systemic cognitive model is advanced which postulates that there are underlying structures in the human mind which are organized in a series of levels in a hierarchically-structured flow model. These underlying structures provide a media in which tool making information is processed and decisions are made concerning tool production.

It is hypothesized that lithic craftsmen make decisions on at least four independent levels which are reflected by four distinct kinds of morphological attributes which are subject to empirical investigation. The four levels which require decision-making on the part of the tool maker are: (1) decisions regarding kinds of materials; (2) decisions regarding the input variables necessary to induce a de-

sired kind of fracture; (3) decisions regarding microstructure or the spacing between constructional units, and (4) decisions regarding macrostructure or outline form perimeters. A fifth level could easily be added to this model which would consider decisions as reflected by morphology regarding use of implements.

The four levels of organization should be conceived of in terms of Feibleman's theory of integrative levels and rules of explanation (see footnote 1, Chapter III). Feibleman's theory postulates that each level represents an emergent quality; its cause exists at a higher level and its mechanism at a lower level. In simplified terms, what this means is that the organization of a level cannot be understood unto itself or treated as a closed system. Rather, if the analyst is to understand or explain a level he must examine the mechanism of processes responsible for the creation of that level. As an example, if one wishes to understand fracture dynamics, it is imperative to have an understanding of wave mechanics. On the other hand, the cause of a particular fracture involved in stone tool making must be viewed in light of the decision used by the artisan in attempting to fulfill a preconceived goal or sub-goal.

Decisions employed by lithic craftsmen are reflected in hierarchically-structured patterns of attributes which mirror the underlying rules in a particular level or set of levels which led to their creation. It is this quality of structured levels of attributes which occur on stone implements in all lithic assemblages which makes it possible to develop a classification system which has universal application. A classification procedure is outlined in the present study

which is directed toward the end of classifying the decision models used in the creation of stone implements.

The basic assumption is made that an interacting social group of artisans will share in common many of the same tool making decision models as a consequence of participating in the same ongoing cultural experience. Thus, the position is taken that decision model types can be used to isolate and characterize archaeological cultures, employed to distinguish between cultures, to cope with questions concerning culture change and perhaps relate assemblages which reflect different aspects of a seasonal round of activity.

Exception is taken to the static traditional morphological taxonomic approaches currently in use. To date most typologists have been concerned with creating artifact types with historical significance which can be used to separate and place aboriginal cultures in time space grids. Although typologists have long been concerned with questions concerning assemblage variability, static types are so constructed as to preclude the meaningful investigation of such systematic questions as migration, diffusion, *in situ* development and trade. Most morphological types have not been created in light of any guiding theory, and are arbitrary categories which focus on the description of the outline form of artifacts and have little explanatory power. They are not defined in terms of the system which led to their creation. Since there is no underlying body of theory to unify types or attributes into a cultural framework, many types cross-cut similar culture systems in a given ecological area and have little utility for defining cultural systems in time and space.

The study has been organized into eight chapters, including the Introduction. In Chapter II, "A Historical Review of the Role of Lithic Classification Systems in Model Building", a comparative analysis is undertaken in an attempt to evaluate five of the major historical morphological classification schemes commonly employed for extracting cultural information from stone artifacts. The theoretical and methodological frameworks which underlie the works of A. Krieger, I. Rouse, A. Spaulding, F. Bordes and E. Semenov are critically examined. Although a number of criticisms are made, they are directed at implicit and explicit ideas, and not the individual scholars. In view of the fact that a number of systematic and definition issues are raised in Chapter II which question the validity of the above-mentioned analytic models, Chapter III is devoted to the task of presenting an alternative approach which strives to overcome some of these problems.

Chapter III is devoted to outlining and defining the systemic cognitive model which provides the interpretive analog for creating decision model types.

Each of the four postulated levels are represented by distinctly different kinds of attributes. The research objective undertaken in Chapters IV--VII is to explicate the kinds of processes which underlie attribute formation in the second level of the model and to discuss some of the implications it has in terms of existing lithic tool classifications.

In attempting to define the nature of the process which underlies the second level of the model, a number of simulation experiments have been conducted. Since it is impossible for the human

tool maker to consistently strike twice in a row in the same spot with the same angle and amount of force, due to human variability, a mechanical rock cracking machine was built as a substitute for its human counterpart. (This machine has since become known as the "stainless steel Indian".)

An attempt has been made to test the effect of input decisions on output morphology. The machine was programmed to conduct 144 individual experiments replicated five times, each holding all variables constant. The data generated from the experiments is examined in light of two fundamental questions: Do unique decisions or distinct combinations of input variables result in equally distinct combinations of output variables as is implicitly assumed in taxonomic systems, or is there overlap? Secondly, do individual or combinations of output features indicate specific input conditions?

Chapters IV--VI are devoted to explicating, implementing and interpreting the experimental results. In Chapter IV, the experimental research design and the controls placed on the individual experiments are outlined. Chapter V on "Fracture Dynamics" attempts to explain the mechanical processes which occur in the rock "black box", and how man can manipulate fracture principle for the purpose of creating tools. As an example of this form of reasoning, the output variables created in the controlled experiments are explained in light of the mechanisms which led to their formation. In Chapter VI the output from a series of integrated computer programs are analyzed, in an attempt to answer the questions of whether or not input variables combine in additive or non-additive ways, and whether or not unique decision models are

reflected by distinctly different combinations of attributes. Attributes which can be assigned to levels one, three and four of the proposed systemic model have not been subjected to the same kind of rigorous investigation as level two, as it is felt that they are far more difficult to interpret.

In Chapter VII a general discussion is advanced, outlining how decision model types are created. A special analytical procedure termed cross level analysis is advanced which can be used to resolve migration, diffusion, in situ development and trade questions. As an example of cross level analytic reasoning using decision model types, data from four Clovis sites--Anzick, Simon, Naco and Murray Springs, havebeen analyzed in attempting to resolve the Clovis migration, diffusion, in situ development controversy. Subsequently, the study is concluded by synthesizing the major points made in fulfilling the objectives undertaken during the course of the study.

CHAPTER II

HISTORICAL REVIEW OF THE ROLE OF LITHIC CLASSIFICATION SYSTEMS IN MODEL BUILDING

A. Introduction

The primary subject matter of archaeology is artifacts, features and remains of utilized flora and fauna which reflect past human adaptations. The prehistorian is an analyst who attempts to abstract cultural information from the surviving physical remains by constructing models of the organization of past cultural subsystems in order to explain their operations and changes through time. However, the models which are constructed must be congruous with the surviving physical evidence. Preservation determines to a large extent the kinds of materials that are available for analysis; but more importantly, the model building practices establish the validity of the ultimate results or reconstruction.

Since the appearance of Flannery's (1967) book review, "Culture History v. Cultural Process: A Debate in American Archaeology", there has been a proliferation of literature largely in *American Antiquity* augmenting the rift between prehistorians. Exactly how a processualist is to be distinguished from a cultural historian in terms of how they build models has yet to be clearly distinguished. In fact, this polemical debate or dialectic, spearheaded by Binford (1972:1-13),

has created considerable confusion and an unnecessary amount of soul-searching.

The focus in this chapter is concentrated on an historical review of the major model building procedures currently employed by prehistorians for abstracting cultural information from stone tools. It will be shown that there are several model building procedures which are currently employed. These analytical practices cannot be forced into the simple categories of historical and process school archaeology. In fact by adopting a systemic point of view I will show that those individuals who identify with the process school are subject to the same kinds of problems as their adversaries, the historicists.

In the past the question that loomed foremost in the minds of prehistorians was how to place cultural remains in a time space grid. Concepts of typology and classification which were developed to fulfill this end actually obscured the relationships between model building units. The theories, hypotheses, classifications and underlying assumptions which determine the validity and significance of types are not explicated in most cases. Nevertheless, through a careful analysis of the goals and objectives of individual classifications their theoretical underpinnings can be exposed. The objective here is to explicate the model building procedures in five lithic classification systems, which have had the greatest effect upon the thought processes of contemporary prehistorians. The works of Krieger (1944 and 1956), Rouse (1939 and 1960), Spaulding (1953, 1960A and 1960B), Bordes (1947, 1950, 1961A, 1967, 1969A and 1970) and Semenov (1964 and 1971) are cited. These works have been selected for their importance and are presented

in abbreviated form for the reader's convenience.

A comparative framework is established for the purpose of evaluating the qualitative procedures in the five alternative schemes. The classification systems are evaluated in terms of:

(1) How attributes are identified

(2) Principles used to organize attributes into types, and

(3) The concepts of culture employed.

The chapter is concluded with a statement on some of the major problems hindering the development of more meaningful classification procedures.

B. Review of Classification Systems

1. Krieger

Alex Krieger, the founder of the typological approach, has expressed his views on classification in several publication (Krieger, 1944 and 1960; and Newell and Krieger, 1949). Prior to Krieger's study (1944) the term "type" was employed in a variety of different ways by archaeologists. In responding to this situation Krieger's primary objective was to clarify and to explicate a method for formulating types.

The typological method is seen as an analytical tool for the purpose of discussing cultural relationships of past human behaviors. Krieger states, " . . . an archaeological type should represent a unit of cultural practice equivalent to the 'culture trait' of ethnography . ." He goes on to say that the purpose of types is for

> " . . . identifying distinct patterns of behavior or technology which can be acquired by one human being from another, and thus serve as tools for the retracing of cultural developments and interactions."

In discussing variability he states,

> " . . . it is the task of the analyst, working with the variable products of primitive manufacturing techniques, to recover, if possible, the mental patterns which lay behind these manifold works, the changes in pattern which occurred from time to time, and the sources of such changes."
>
> (Krieger 1944:272)

Thus Krieger uses types which are specific groupings of structural features as an organizational tool to place specimens into behavioral patterns that have historical significance. The tenets of the method can be exemplified by a pottery example. Krieger states that a

> " . . . type is to be defined by a specific and cohesive combination of feature of paste, temper, texture, hardness, finish, vessel shape, technique and arrangement of decoration, use of appendages, etc., and furthermore includes what is believed to be individual variation within the technical pattern; the type as a whole is also understood to occupy a definable historical position, that is, its distribution is delimited in space, time, and association with other cultural material."
>
> (Krieger 1944:277-278)

In defining the theoretical scope of the type concept Krieger states:

> "1. Each type should approximate as closely as possible the combination of mechanical and aesthetic executions which formed a definite structural pattern in the minds of a number of workers, who attained this pattern with varying degrees of success and interpretation."

He then suggests,

> "5. There are no criteria of basic or universally primary importance in forming a typology. Each specific combination of features--i.e., the manner in which they combine--is of greater determinative value than any single feature."

In outlining procedures for the typological approach six

steps are outlined. The first problem to be faced by the analyst is:

> " . . . to sort specimens into major groups which look as though they had been made with the same or similar structural pattern in mind. This step is somewhat subjective, for there will be different opinions on what amount of variation can be allowed for. The main point is to sort the material into groups which contrast strongly."
>
> (Krieger 1944:280-281)

This initial sorting into trial working patterns is largely experimental, and the difference of opinions as to what constitutes a pattern will be eliminated during succeeding steps. The second procedure involves breaking down the working patterns into smaller units according to consistent differences seen in some but not all specimens of the pattern. The third step is concerned with recombining working groups into the types on the basis of geographical (i.e., site to site) temporal and associational occurrences. It is in this way that characteristics are identified as belonging to a single plan. Details which consistently combine through site after site in the same temporal horizon and in the same culture complex can be regrouped into tentative types. Krieger states

> "These differ from all other so-called types in that the cohesiveness of their elements has been proved through the use of archaeological data rather than simply supposed through a variety of assumptions."
>
> (Krieger 1944:281)

The fourth step simply involves the testing of the proposed types as new information becomes available. After the types have satisfied the above criteria they may then be named and described, which is the fifth step. The sixth and last step focuses on reconstructing cultural relationships

through the use of typological information. By linking associated types it is possible to identify material as belonging to a single culture during a restricted time period. An aggregate of types belonging to the same culture are termed a complex.

As an example, the projectile point description of the type Yarbrough Stemmed, is described in terms of its prominent features:

"Greatest width: across shoulders.

Stem:	edges usually concave in uniform curve from shoulder to somewhat stem tip, but grades into straight edge without flare; edges are commonly ground or rubbed smooth.
Base:	usually concave with sharp stem tips, but grades into straight line.
Shoulders:	slight and formed only by outward curve of stem edges meeting blade corners.
Blade:	edges essentially straight but may be irregular with crude chipping; usually, if not always, levelled with two parallel pitches on opposite faces; level narrow and difficult to see if chipping crude.
Cross-section:	stem elliptical; blade more or less rhomboid with convex faces.
Material:	poor grade of flint or 'Chert', dull reddish or grey.
Chipping:	percussion, with pressure retouching along beveled edges.

Dimensions ranges: (334 specimens)

a. Widths:	Base	14 - 18 mm.
	Stem neck (narrowed above base)	12 - 15 mm.
	Shoulders	17 - 22 mm.

b. Lengths: Stem (base to constriction below shoulders 14 - 19 mm.

Blade (remainder of specimen) 21 - 39 mm.

Total 38 - 55 mm.

c. Thickness: 5 - 8 mm."

"Distribution . . . all <u>in situ</u> specimens from Fred Yarbrough site, Van Zandt county; surface specimens from Wood County. Insufficient data for placement in definite focus but apparently earlier than the Sanders focus."

(Krieger 1944:281).

2. <u>Rouse</u>

Irving Rouse (1939, 1960) introduced an analytical classification system based on the concept of mode which he contrasts against the taxonomic approach founded on the concept of type. Rouse defines what he means by classification when he cites the definition of Nielson, Knott and Earhart (1940:46):

" . . . the word classification refers to 'the act of assigning (artifacts) to a proper class'. If the class is a new one, it will have to be defined by listing criteria used to form it and will also have to given a name or number."

(Rouse 1960:313)

Archaeologists usually select those criteria either to establish modes or form types. The term mode means

" . . . any standard, concept, or custom which governs the behavior of the artisans of a community, which they hand down from generation to generation, and which may spread from community to community over considerable distances."

(Rouse 1939)

Such modes will be reflected in the artifacts as attributes which con-

form to a community's standards, which express its concepts, or which reveal its customary ways of manufacturing and using artifacts. Analytic classification focuses on these attributes and, through them, attempts to get at the standards, concepts, and customs themselves (Rouse 1960:313).

Only modes of cultural significance are considered in analytic classification. They may be of two kinds,

> " . . . (1) Concepts of material, shape, and decoration to which the artisans conformed and (2) customary procedures followed in making and using the artifacts. In the case of conceptual modes, the archaeologist need only designate one or more attributes of his artifacts to be diagnostic of each class, but in the case of procedural modes he must also infer behavior of the artisans from the diagnostic attributes."
>
> (Rouse 1960:315)

The artisan's procedures are followed in establishing an analytic classification. The analyst may accomplish this end by establishing sequential modes which follow manufacture procedures. As an example, materials might first be considered; and then technique of manufacture; and finally classes of shape, decoration and use. At each stage in this sequential analytic procedure it may be found that craftsmen had a choice of standards or customs. Individual classes will have one or more diagnostic attributes that are indicative of single modes.

The following description of a flint dagger is defined in terms of modes:

"(1) Blades are relatively thin.
(2) Blades are usually rechipped.
(3) Blades always have a hilt.
(4) Rechipping occurs on the flat surface on top

> of the hilt, instead of being confined to
> the edges of the blade.
>
> (5) Blades always have a rechipped point."
>
> (Rouse 1939:43-44)

3. Spaulding

Spaulding (1953, 1960A and 1960B) pioneered a descriptive classification system based on the use of inferential statistics. His studies are quite significant as they laid the foundation for subsequent statistical developments using computer technology. Inferential statistics are used with two main objectives: for the descriptive quantitative aspects which focus on measurements, counts and relationships between or within measurements; and (2) making the best possible decision in view of uncertainty about numerical matters.

My objective here will be to review Spaulding's conceptual framework rather than his use of statistics.

Key concepts in Spaulding's scheme are culture, attribute, artifact, type and assemblage. Culture is viewed as

> " . . . patterned behavior at the level of symbolic activity, and the patterning and symbolism are interpersonal, a product of human social life. Artifacts tend very strongly to occur in the spatial clusters we call sites primarily because their makers and users lived in societies. The ideal unit of archaeological study is the assemblage of artifacts produced and used by a single society over a period of time short enough to preclude any marked changes through cultural innovations or shifts in relative popularity of attributes or attribute combinations."
>
> (Spaulding 1960:61-62)

The term attribute is used

> " . . . to signify any property or quality of

> a thing or event. The attribute may be one of a continuous group, a measurement of length, for example, or it may be a discrete quality, as in the case of observing that an object is made of bone. The attribute may be a physical or chemical property of an object--weight, shape, chemical composition and so on--or it may be a position in space or time. Finally, the attribute may be the result of culturally patterned behavior or it may not; archaeologists are concerned only with culturally relevant attributes."
>
> (Spaulding 1960:61)

Two classes of attributes are identified. Those which have physicochemical properties are referred to as formal attributes, and non-formal attributes have space and time referents. The task of identifying relevant cultural attributes is largely a matter of experience and expertise on the part of the individual investigator. Artifacts are defined as

> " . . . the class of objects that the archaeologists study, and the concept is used here to include all objects and traces of objects that have been modified by cultural behavior. By treating the artifact as a given, I avoid the difficult and important problem of distinguishing between the simplest artifacts and the products of nature."
>
> (Spaulding 1960A:61)

An artifact type is defined as

> " . . . a group of artifacts exhibiting a consistent assemblage of attributes whose combined properties give a characteristic pattern. This implies that, even within a context of quite similar artifacts, classification into types is a process of discovery of combinations of attributes favored by the makers of the artifact, not an arbitrary procedure of the classifier. Classification is further an operation which must be carried out exhaustively and independently for each cultural context if the most fruitful historical interpretations are to be made."
>
> (Spaulding 1953:305)

Formal attributes such as length, width and thickness are quantified by using a metric scale. These measurements are then subjected to such statistical manipulations as mean, standard deviation, Chi square, regression computations and rank ordering. Examples of these statistical manipulations are to be found in Spaulding's 1960A article.

4. Bordes

François Bordes refers to his classification system as the morphological approach. Descriptions of objectives and typological procedures are scattered throughout several sources (1947, 1950, 1961A, 1967, 1969, 1970). Morphological types are based on a combination of technological attributes and formal attributes relating to external shape. These types are used as a tool in the study of adaptation. The objectives of this typology are to evaluate the implement needs of man as he conceived them, the traditions of groups, and their group's response to environment. Bordes advocates that the frequency of tool types occurring in archaeological assemblages may be determined by statistical analyses and be represented in cumulative graphs. Tool frequencies are viewed as a response of human groups to the challenge of environmental conditions. Morphological types are essentially descriptive and do not investigate tool utilization.

Bordes advanced typology, as he was interested in the study of total assemblages rather than fossil index artifact types; e.g., projectile points. He was able to do this because he is an experienced lithic craftsman. He relies on the experimental method not only as a means for discerning types, but also for understanding the relationship between types. By using the concept of technique, dissimilar forms,

e.g., flakes and cores, are linked on the basis of common production features. A case in point is the Levallois flaking tradition. By using the terms Levallois core and/or Levallois flake one immediately recognizes that there is a relationship between the two. Bordes has defined a number of distinct technological patterns through the use of the experimental approach (1947, 1948, 1950, 1954, 1963, 1969B, 1970). When he is uncertain which particular method was used he discusses the logical alternatives on the basis of experimental data.

In outlining his assumptions concerning Paleolithic man's tool making behavior Bordes suggests: (1) implements were made for use, not pleasure or sport; (2) implements were produced in proportion to need except in the case of workshops; (3) the more specialized tools reflect more specialized usages; (4) generally morphology becomes clearly established as use develops; (5) specification becomes evident in proportion to the increase in specialization of an implement (1969:1).

An example of one of Bordes' types is Racloirs Lateraux Simples:

> "Ils peuvent être sur éclats ou lames. Leur bord est plus ou mois parallèl à l'axe de l'éclat, la qualite de la retouche est très variable, parfois grossière, parfois presque Solutréene."[1]
>
> (Bordes 1961:25)

5. Semenov

S.A. Semenov is known in the West for his now-famous book,

---

[1] Single Sided Scrapers--they can be on flakes or blades. Their edge is more or less parallel to the axis of the flake, the quality of retouch is quite variable, sometimes coarse, sometimes almost Solutrean.

Prehistoric Technology (1964). In this study an approach for identifying and interpreting the functional significance of prehistoric stone and bone implements is presented. In 1968 Semenov published a second major work on functional analysis which has yet to be translated into English. Because this volume is not available, his approach is abstracted from his 1964 study.

Semenov does not attempt to identify archaeological culture; his objectives are to determine function and thereby to study the history of the oldest tools, stone and bone implements through the analysis of microscopic wear patterns. The basic assumption made is that "Traces of wear make it possible to define what work was done with a given tool, that is, how the object being studied was used and on what material" (Semenov 1964:2). Traces of wear are believed to reflect work activities and hence yield information on ancient man's economic pursuits. Through the application of the binocular microscope, using techniques of metal dusting, and colorizing the surfaces of diagnostic areas, chipped, polished and ground and rasped areas are examined. Quantitative techniques have recently been introduced for the study of these microfeatures (Semenov 1971:8). A binocular Linnik is employed for the micrometric method. The principle of a light section is used; the profile-height and depth of worn surfaces are compared with unworn surfaces in microns. In addition, a reflex technique is used to determine the degree of gloss or polish on surfaces. Wear patterns are normally recorded through the use of drawings and photo micrographs (Semenov 1964).

Semenov states:

> "The method of study of functions by traces of work is based on the kinematics of working

> with the hand, the special features of which are expressed in the striations due to wear (geometry of traces). In addition the size of traces of wear indicate the character of the material being worked, its structural and mechanical properties (topography of traces). These two types of evidence, geometric and topographical, when analysed, are related to the form of the working part of the tool, its general shape, dimensions, weight, and the material of which it is made. All these matters taken into account together supply a solution to the question of the purpose of this or that tool."
>
> (Semenov 1964:5)

The patterning of friction traces has enabled a typology to be established so that tool forms can be identified as to functions.

> "If work such as piercing is done by straight pressure of the tool (axial approach) the traces of wear arising from the movement will be straight lines parallel to the axis of the tool."
>
> (Semenov 1964:18)

An alternative type of wear pattern occurring on saws is described as "Traces of sawing in the form of straight scratches are always disposed on the side surfaces of the tool parallel to the working edge" (Semenov 1964:19). Other examples could be cited but these should be sufficient for examplifying how types of wear patterns are inferred from tool morphology and then related to work activities. Inferences such as the one cited in the above quote are not based on practical experiments but are apparently created on the basis of personal practical experience and intuition.

C. Problems Relating to the Selection of Attributes and the Formation of Types

1. Introduction

When faced with the task of analysing prehistoric remains

the analyst must choose some kind of analytical unit. The units which are selected must be derived from or be analogous to some kind of known system if the units are to be logical ones (Dunnell 1971:23-26). The units selected have a dual purpose of providing a means of identification as well as classification. Thus it follows that a classification can be no better than the analogs on which it is based. Until the day arrives when a reliable time machine is invented, prehistorians will continue to base their research on the premise that phenomena and processes occurring in the present, in particular observations upon functioning ethnographic societies, provides a key for inferring past events. The validity of any model or reconstruction will be determined by the kinds of analogs chosen as significant.

In the five classification systems reviewed the minimal unit of analysis which provides the foundation for constructing types is the attribute. In the following discussion the question of how formal and technological attributes are selected is examined.

2. Problems Relating to Attribute Class Formation

a. Formal Attributes

In view of the fact that none of the classification systems reviewed here make explicit how attributes are selected for the formation of types, it will be useful to look at some of the major methods and problems associated with this analytical operation.

Analogs derived from ethnographic societies are commonly used for identification purposes as well as to provide classes into which data can be sorted. Therefore it is important that archaeologists be aware of the kinds of categories and the limitations of these categories

in attempting to use them to explain past phenomena.

Most American ethnographies are descriptive ethno-historical studies made on a particular group of people. Not infrequently ethnographers used folk taxonomies, i.e., functional descriptive classes, for organizing their data. These categories are frequently inadequate for archaeological purposes. Since the prehistorian is concerned with cross cultural research, he needs a set of classes which set forth rigid criteria of what constitutes membership. Folk taxonomies, i.e., emic function classes, are not always well suited to this task as the criteria of what constitutes membership in a class are frequently relative to a particular society.

Unfortunately there never has been a single study made on the total range of flaking processes practised by a social group, let alone the transmission processes between generations. Most studies are concerned with how one or a few implements were made, but never is the full range of techniques and implements recorded. Inferences derived from the technological systems of ethnographic societies should be applied to prehistoric data with care. Furthermore, as L.R. Binford (1968) suggests, there were undoubtedly societies in the past that lack ethnographic equivalents.

Also, perceptual problems arise when a non technically-oriented person attempts to record technical operations. The kind of problems that can develop when the investigator is from a western industrialized nation is reflected by an experiment conducted by the author with an introductory anthropology class. Students were asked to record the manufacturing sequence which was demonstrated while producing a single projectile point. Only one student out of twenty-eight, a former

newspaper man, recorded the correct sequence of events. The experiment demonstrated that a single viewing in an ethnographic context typically will result in the omission of and even the inversion of the sequence, resulting in an inaccurate record. The observer must be specially trained to record accurately.

In view of the dearth of appropriate ethnographic analogs many prehistorians use what is here called projective analogy. Attributes used for classification purposes are defined in terms of categories derived from the analyst's own cultural background. In fact, most attribute lists are inductively derived, and are not formulated in light of any guiding theory. The major difficulty in employing this kind of attribute list is that there is no demonstrated relationship between the proposed attributes and the theoretical objectives of the classification scheme in use. A few schemes which exemplify this kind of problem are to be found in the works of Krieger (1944), Spaulding (1953), Rouse (1939), Bordes (1961) and Semenov (1964), Binford (1963), Benfer (1969) and Wilmsen (1970), among others.

Ethnographers have commonly used a formal descriptive approach focusing on outline morphology to describe functional items. Descriptions of this nature provide the basis of the form-function hypothesis so commonly found in archaeological reports. All the classification schemes reviewed in Chapter II are designed to generate this kind of information.

There are a variety of problems associated with the selection and description of formal attributes which tend to undermine the validity of the form-function hypothesis. Foremost of these are (i) the descriptive system itself; (ii) cultural vs. non-cultural attributes;

(iii) the problem of isomorphism; (iv) the problem of multiple functions; (v) the lack of ethnographic analogs and perceptual problems.

i. The Descriptive System:

The physical description of the external form of artifacts is based on Euclidean geometry. Terms such as triangular or rectangular or concave and convex frequently do not fit the artifact forms under consideration; consequently, the analyst is forced to qualify in his description by saying the outline is triangular-like or the specimen is semi-ovoid. In the science of geometry a form is either ovoid or triangular or it is not; archaeologists have modified these etic spatial categories with qualifications, thus often forcing this descriptive system beyond its logically useful limits.

Spaulding (1953) has suggested the use of quantitative methods in an attempt to solidify some of the qualitative descriptive aspects of typology. Metric scales do provide a standardized measure by which specimens can be compared, but before such measures can acquire meaning the analyst must by some means decide what kind of information is being measured. Most artifact measurements are taken on the artifact's external formal perimeters such as length, width and thickness. These kinds of measurements will yield almost no information on production structures or the processes behind tool formation. In this case Levi-Strauss' warning should be heeded: " . . . there is no necessary connection between measure and structure" (1953:528).

ii. Cultural vs. Non-cultural Attributes

One of the major implicit assumptions made concerning Krieger's (1944) feature, Rouse's (1939) mode or Spaulding's (1953) attri-

bute is that each one of these units are conceived of as an independent variable indicative of specific units of culturally conditioned behavior. Le Roy Johnson's apt criticism is worth repeating here. He states:

> "It is unrealistic to suppose that archaeologic data is such that interdependent items can always be segregated from the independent (and dependent) ones, for cultural data may relate to each other in complex ways. Tool form is partly determined by the qualities of the available raw material and it is not free to vary infinitely, while the qualities of the raw material may be a function of climate and geographic location. Apparently different artifact styles and types among different assemblages may often be genetically linked by a common origin in the remote past; apparently similar styles and types from different contexts may sometimes represent analogs rather than homologs. Also, seemingly independent traits in the same archaeological association unit may in fact have a strong mechanical or functional relationship to one another which is hard to see."
>
> (1972:372-373)

Goodman (1944) indicates that different kinds of stone materials are characterized by dissimilar physical properties and behave differentially under stress. What this suggests is that synonymous human behaviors used to create stress systems in alternative kinds of stone materials may be reflected by dissimilar fracture or wear morphologies. In contrast, both Bordes (1971:212) and Semenov (1964) assume that a uniform interpretive framework can be applied to all implements, regardless of the artifact's material properties.

iii. The Problem of Isomorphism

Formal attribute systems which focus exclusively on external form will have little utility in distinguishing homologous from analogous tools. In other words, tools with similar forms but produced by

employing distinctively different technological systems cannot be separated by focusing one's observations only on the outline. A problem of this nature becomes particularly acute in attempting to establish the major lines of cultural development on a regional basis. It is logical to assume that independent and distinct cultures living in proximity may adapt to the same environment in much the same way. A survey of archaeological site reports will quickly reveal that such common tool forms as projectile points, knives, scrapers, etc., appear to have an almost continuous distribution through long periods of time and across expansive spatial areas. For example, side notched projectile points and end scrapers occur from Alaska to Mexico and from the Atlantic to the Pacific.

Isomorphic structures can be produced through the use of different technological systems. As Schapiro (1966:84) indicates, form is more subject to change than technical manufacture operations. Quite clearly in the the Americas the occurrence of isomorphic stone implements is a common widespread problem which has been subjected to little systematic investigation in light of technical processes.

iv. The Problem of Multiple Functions:

Each of the typological systems reviewed assumes that each tool type or form has but one function. Indeed, tool form is not necessarily a good indication of function or adaptation to environment as assumed in the form-function hypothesis. Ahler (1971) demonstrated through the use of microscopic and experimental evidence that projectile point types of the same form from Rodgers Shelter, Missouri were employed in different functional activities. Hence this case study challenges the assumption that all stone tools were designed for task specific

activities. The alternative proposition that must be examined is that tools having the same shape were employed in multiple functional activities.

b. Technological Attributes

The typological constructs suggested by Krieger, Spaulding, Rouse, and Bordes, as reviewed in Chapter II, emphasize that artifact types should be constructed in view of the techniques used in manufacture. None of these investigators clearly define what is meant by the ambiguous term "technique". Technological attributes are here viewed as morphological features which have resulted from the application of a specific set of input variables. Undoubtedly one of the reasons the ethnographic record is so poor in terms of defining technological operations and resulting morphological features is that it is not well suited for this kind of task. The ethnographers' observational and descriptive approach has failed to provide underlying theory for explaining the formation of technological attributes as the ethnographer cannot observe what is happening inside the rock, no matter how long or carefully he watches.

In view of these problems, experimental analogy has played a vital role in defining technological variables since the inception of the discipline. The basic premise of experimental analogy is that laboratory experiments may be designed and conducted to provide a means for assaying non-observed behavior. Robert and Marcia Ascher (1965) distinguish between two kinds of experimental analogs which are based on replicative and simulation experiments. In simulation experiments the assumption is made that not all variables can be controlled in a field situation. In response to this limitation experiments are moved into a

laboratory where variables can be controlled. Replicative experiments are founded on the idea that present-day production and use experiments, using the same materials as the aborigines, provide structural and functional insights into tool-using behaviors.

In order to clarify some of the problems associated with rising technological attribute classes, based on experimental analogs, it will be necessary to outline some of the historical factors which have contributed to the formation of technological attribute classes now commonly incorporated into type definitions.

Replicative experimentation has a long history with a rather interesting beginning. Edward Simpson is one of the earliest recorded experimentalists, if not the first in the 1850's and 1860's. In archaeological circles he is known by his alias, "Flint Jack" or "Cockney Bill" as some called him. His keen interest in replicative experimentation for fun and profit was regarded as forgery by the early self-righteous Victorian antiquarians. Flint Jack was rewarded for his craftsmanship by a year in prison (Blacking 1953).

Both Daniels (1962) and Bordaz (1970) indicate that prehistoric tools were recognized as tools by a few isolated individuals at least a century prior to Darwin's now-famous The Origin of Species, first published in 1859. However, implements did not receive any widespread scientific attention until a number of other problems were first solved. Before the significance of the association of human skeletal materials, extinct fauna and stone implements could be recognized as significant the ideas of essentialism, catastrophism, creationism and Lamarkianism had to be replaced by a viable concept of species backed by

population thinking (cf. Mayr 1972:981-989).

Dilettante excavators working independently in several countries uncovered a great deal of evidence bearing on man's antiquity. Schmerling working in Belgium and Bouchet de Perth in France won some converts with their discoveries However, the "big break" did not come until the geologists squared themselves with the concept of evolution. Prestwich and Evans delivered papers on Boucher de Perthes' Somme Valley discoveries to the rapidly-developing scientific community in England. An enthusiasm for the antiquity of man swept across Europe and the geologist started to back the claims of the dilettante excavators. A number of old excavations were reopened after 1858 and a number of new projects were undertaken. The "grand old man" Lyell himself, almost in bandwagon style, visited many of the discoveries in Belgium, France and England in an attempt to validate their authenticity (Lyell 1873).

In this early period prior to the development of professional prehistoric archaeologists, the criteria for identifying human tools were not particularly well defined. In Sir John Evans' 1872 discussion of the Somme Valley implements he states, "In regard to the origin, there is a uniform shape, a correctness of outline and a sharpness about the cutting edges and points which cannot be due to anything but design" (Lyell 1873:164).

A critical approach for evaluating stone tools did not emerge until the Eolith polemic developed. In 1867 Abbe Bourgeois announced for the first time the discovery of "Eoliths" (crude, questionable tools, thought to predate the Paleolithic) at Thenay, France. Bourgeois' discovery created a controversy at the Congress of Prehistoric Archaeology that year in Paris, a debate which set the stage for the beginnings of

the experimental approach in prehistoric archaeology. The president of the meeting resolved the controversial discussion by suggesting ". . . that laboratory experiments should be made in the manner suggested by M. Boule and M. Cartailhac . . . (who were) asked to assist in the work" (Stirrup 1885:290).

The concept of conchoidal fracture, probably first advanced by Hugh Falconer, a geologist (Evans 1897:274), gained widespread acceptance as a criterion for distinguishing human workmanship. Versions of this idea are to be found in the works of Evans (1897:273-275), Lubbock (1890:88-89), and Oakley (1957:15), to name but a few. More recently, Bordaz has stated in his book, Tools of the Old and New Stone Age:

> " . . . Prehistoric man tended to select homogeneous materials which have no definite cleavage planes. Such materials are homogeneous either because they lack a well-defined crystal structure (as in the case of the solidified lavas) or because the crystals are minute, as is the case with the majority of siliceous stones.
>
> "As force applied at one point on the surface of such homogeneous rock or mineral will radiate symmetrically in all directions with a cone whose tip is at the point of impact, this force will punch out a conical fragment having a concentrically rippled surface, leaving a corresponding conical scar in the parent material. If the point of impact is near the edge, a chip will flake off, leaving a rippled half-cone scar . . . Below the point of applied force . . . is a conical swelling called the bulb of percussion. It is sometimes accompanied by secondary features such as a bulbar scar due to the flaking of a small chip from its surface."
>
> (Bordaz 1970:12)

Although the idea of conchoidal fracture received widespread acceptance, it had its critics. Hazeldine Warren, for example, indicated

that there is no single character which cannot be duplicated by natural flaking (1923:168).

For over 100 years the concept of conchoidal fracture has provided a descriptive framework in which to interpret morphological fracture features. However, it is never made explicit as to how this concept can be linked to specific kinds of human behavior.

Alonzo Pond, in Primitive Methods of Working Stone, Based on Experiments of Halvor and Skavlem (Pond 1930), was the first investigator to break his ties with the conchoidal fracture idea. Pond's argument is based on the theory of elasticity. Mr. Skavlem was the first to recognize that chipped implements made of homogeneous materials such as flint of obsidian have no line of greatest weakness, and present a problem analogous to that of elastic solids. Skavlem suggested that in the flaking process chipped implements break along the planes of greatest stress; and whenever that stress exceeds the strength of the material a break will occur. Failure is thought to occur on a plane normal to the greatest tensile stress, on a plane normal to the greatest extension or on the plane of greatest shear stress (Pond 1930:27-64).

Like the early advocates of the conchoidal fracture model, Pond believes that the perfect cone of percussion is the critical link for understanding other aspects of fracture. He attempts to explain the radial forces that produce the cone by citing a formula advanced by Timoshenko and Lessels (1925:62). Unfortunately, the equation which Pond presents,

$$\text{"pr equals } \frac{2W}{T} \frac{\text{COS}}{r} \text{"}$$

is an inaccurate citation (Pond 1930:47). The formula should read,

$$Pr = \frac{2W}{\pi T} \frac{\text{COS}}{r} \phi$$

in which T = width of the beam, r = the distance from the point 0, ϕ = the angle shown in Figure 70 (Timoshenko and Lessels 1925:62). Actually this formula is not particularly applicable for Pond's purposes as ductile and brittle solids behave differentially under stress; also, once fracture is initiated the stresses are radically redistributed.

Pond explains that the concentric rings found on cones appear to mark lines of equal stress which are indicative of simultaneous occurrence of fracture at all points. The wave or trough-like forms found on cones are thought to be due to vibrations in the material (Pond 1930:51).

> "Flakes and blades seem to be produced by a combination of laterial extension due to compression and shearing stresses produced by downward pressure. Their length is determined by bending produced by outward pressure. Long blades are produced when the bending stress is almost negligible and short flakes are the result of bending being dominant."
>
> (Pond 1930:51)

Pond further expands this idea when he states:

> "It will be understood that the bone point or chipping tool remains in contact with the flake during the whole time the flake is separating from the material and the pressure is being applied through the point all the time. In ordinary chipping there is a tendency to move the chipping tool away from the material as the flake separates. This, of course, produces considerable <u>bending</u>. If this bending exceeds the strength of the material at any time before the failure caused by

> shear and extension has attained the maximum length, the flake will either break or run out to the edge of the material and hence be shorter than the maximum length."
>
> (Pond 1930:53-54)

Pond (1930:51) cites James E. Boyd's text, Strength of Materials (1911) for his concepts of bending and shearing. In the section cited Boyd is referring to ductile materials which behave differentially under stress as compared to the brittle solids that aboriginal peoples commonly used for tool making. When brittle materials fail under dynamic loads (e.g., both pressure and percussion flaking), very little if any bending or compressional deformation occurs. Pond's attempt to interpret fracture morphological features in light of concepts developed from the theories of elasticity and plasticity must be rejected, as he failed to distinguish between ductile and brittle materials.

Pond's work, however, has served as a stimulus for subsequent research. William Morgan (1967) prepared a Master's Thesis entitled, "Physical Principles in Stone Working: Some Aspects of Ecuadorian Chipped Stone Technology". Morgan attempted to pull together a number of engineering concepts, many of which relate to theories of elasticity and plasticity that are relevant for interpreting fracture features. Morgan's study was probably the first step in a larger program envisioned by William Mayer-Oakes, who was then Chairman of the Department of Anthropology at the University of Manitoba. Mayer-Oakes (1967:2) had plans for isolating the principles that govern conchoidal fracture as well as manufacturing a robot chipping device which could be used in a comparative framework with a live chipper. However, these plans did not materialize beyond the analysis of the El Inga data.

Don Crabtree, founder of the Idaho School of Lithic Technology at Idaho State University, bases many of his interpretations on Pond's views. Not only does he follow Pond's idea that the cone is the key interpretive concept in lithic technology but he also relies on the theory of elasticity. In his article, "The Cone Fracture Principle and the Manufacture of Lithic Materials", Crabtree states:

> "An understanding of the correlation of the cone principle to the behavior and fracture of lithic material and the detachment forces involved will help clarify the mechanical principles included in lithic technology. When force is applied to lithic material, the stone compress es and the force radiates tangentially to the direction of its application until the elastic limit of the material is exceeded and fracture occurs. The applied force must be pre-determined magnitude to form a cone in the lithic material to define direction to control the fracture angle of the cone and detach the desired flake or blade."
>
> (Crabtree 1972B:29)

As an example of the cone principle Crabtree states

> "When (a BB) pellet strikes the pane at right angles to the flat surface, the force radiates outward in widening circles at an angle tangential to the direction of impact and finally the force exceeds the elastic limit of the glass and a cone is removed from the opposite side of the point of applied force. If the energy of the pellet is insufficient and the force dissipated, the cone will penetrate only part way- or not at all--and only a cone part will form. If the velocity of the pellet is too great, then the cone will shatter.
>
> Flakes are cone parts and the fracture angle of the cone is the ventral side of the flake. The apex of the cone (proximal end of the flake) where the force is applied is called the platform part. Examination of the platform angle and the fracture angle of the cone will determine the direction of applied force."
>
> (Crabtree 1972A:6-7)

The undemonstrated assumption which Crabtree makes is that the morphological cone results when stone is compressed and the force radiates tangentially to the direction of its application, and failure occurs when the elastic limits of the material are reached. This redistribution of force concept is referred to as the cone of force. No supporting evidence is provided to demonstrate force is actually redistributed in this manner. Contrary to Crabtree's point of view, it will be argued in Chapter V that fracture features are produced through tensile failure of material.

Crabtree (1972A and 1972B) further notes that cone splitting is an exception to the rule of using the fracture angle of the cone. The cone is split by supporting the working piece, thereby setting up opposing forces and causing the cone to shear. In this case, the fracture is quite flat and the positive and negative surfaces have little or no bulb of force. Subsequently, in his glossary the term elasticity is defined as "the property of stone to return to its former state after being depressed by the application of force. Ideal lithic materials are almost perfectly elastic" (Crabtree 1972A:60). The concept of elasticity is used to explain a fracture feature known as end shock. It is defined as "Transverse fracture due to the stone exceeding its elastic limits. Failure of the material to rebound and recoil before fracture occurs" (Crabtree 1972A:60).

In terms of the research developments that have occurred in lithic technology in the last ten years, it is interesting to note one of the points made by Pond:

> "During his work Mr. Skavlem has many times expressed the wish that a study of flint fracture could be made before an ultra-speed motion picture camera capable of registering the progress

> of a fracture which produces a flake. Such experiments would be conclusive."
>
> (Pond 1930:69)

Advances made in hish-speed photography now make it possible to follow Pond's early suggestion. Crabtree, in his "MesoAmerican Polyhedral Cores and Prismatic Blades" (1968) paper, published his first results of recording blade detachment with a high-speed camera. He states that

> " . . . the many tests made with the high-speed camera show that the blade is removed in the short interval of three to five frames--with the camera operating at 5,000 frames per second or about 1/1,250th of a second. The initial break has been calculated at 1/19,000 of a second. It is puzzling but enlightening to discover that the blade is removed at such a high rate of speed. This paradox would seem to indicate that the blade removal is controlled by preprogramming the involuntary muscular behavior of the worker and not by consciously directing the reaction of the muscles during the blade manufacture. There is little doubt the worker can control the bending of flakes or blades, for we have the surface evidence proof on bifacially flaked artifacts that have been ripple flaked over a curved surface from one lateral edge to the other."
>
> (Crabtree 1968:472)

Pond's prediction that high-speed photography would provide conclusive results was indeed correct. Crabtree's own experimental results demonstrate the inadequacy of his elasticity theory. Crabtree, like Pond, believes lithic materials to be quite elastic, a property which permits the use of subtle motor control. Thus elasticity of material is cited to explain flake curvature. If the elastic theory were correct, one would expect the blades illustrated in the photographs to be bent as predicted, but they did not behave in this way and are

straight. Furthermore, fracture occurred much more rapidly than was anticipated. Crabtree was unable to reconcile this problem with his concept of elasticity so he cited curved collateral parallel flakes that occur on bifaces to support his interpretive framework. There is no reason to believe the speed of fracture should be reduced in biface production.

Like previous workers, Crabtree relies heavily on the cone principle as an interpretive tool for explaining fracture morphology. If flakes of blades were really only segments or sections of cones the platform areas of blades and flakes should converge to a triangular apex as is the shape of a cone.

Crabtree admits in his definition of the cone principle that cone splitting is an exception. He suggests opposing forces set up from the support cause the cone to shear and the fracture to be quite flat. Subsequently, in his discussion of bipolar flaking he states:

> "Force is induced from both the anvil and percussor, causing cones of force to form at both ends of the pebble or cobble, not necessarily leaving cone scars. When the force is in direct opposition, the cones exceed the elastic limit of the material and it shatters. The debris will resemble segments of an orange."
>
> (Crabtree 1972A:10)

It would seem that there is a contradiction here, but indeed both flat fractures and segments that look like oranges are produced as a result of the bipolar technique.

If the cone principle were more than a morphological feature, it could perhaps be considered as a useful interpretive tool. However, under scrutiny it breaks down. For example, why isn't a biconoid fracture

produced when bipolar flaking occurs? Could it be that there are mechanical principles that underlie the production of such specific morphological features as cones and bipolar fracture which have not been considered? This question will again be taken up in Chapter V.

3. Concluding Remarks

Thus, neither the conchoidal fracture theory nor Pond's elasticity theory nor Crabtree's cone principle provide a sufficient theory for defining technological attribute classes. Consequently, technological attribute classes now in use are mostly intuitive categories. Today there are an increasing number of individuals who can replicate tool forms. Replicative experiments used as experimental analogs should be viewed with caution. There may be several alternative ways open to the tool maker for replicating an aboriginal specimen; however, there is no way of knowing in view of the lack of quantitative methods (cf. Jelinek 1971), if the replicated form is homologous or analogous to the aboriginal control specimen.

In the past concern has been expressed in regard to methods for constructing valid types. The two separate methods are known as internal and external validity. Krieger, using external validity, attempts to demonstrate the existence of valid types by identifying characteristics on a site to site basis to show consistency, range, variation and historical relevance. The use of internal validity is used by Spaulding when he employs inferential statistics. The advantage of the internal validity approach is that the range of variability can be quantified within any assemblage of artifacts, providing a more absolute comparative framework.

In the foregoing section an attempt has been made to demonstrate that the qualitative methods used in attribute selection are based on unsystematic procedures. Regardless of whether an analyst uses internal or external validity, if his attribute analog sources are not correct his attribute classes, and therefore the type, will also be invalid.

In addition to these problems which undermine the utility of the form function hypothesis, combinations of formal and functional attributes are intuitively scaled in terms of significance. For example, fossil index types created by Krieger, Spaulding and Bordes have been used to characterize and to date cultural developments. Since the advent of sophisticated and better dating methods, e.g., radiocarbon dating, however, chronological systems can now be established independent of artifact types.

D. Principles for Organizing Attributes into Types

The five classification systems which have been reviewed in Section II are basically of two varieties, termed "taxonomic" and "analytic" by Rouse (1960). The taxonomic systems depend on the principle of affinity. Artifacts are placed into groups on the basis of the overall similarity of the total constellation of easily recognizable attributes. There are several alternative methods by which this end may be achieved. Krieger works intuitively, shuffling implements back and forth between groups until relatively homogenous classes and types are achieved. On the other hand, Spaulding finds types by noting the most frequent combinations of attributes statistically.

The objective of taxonomic classification has not been directed toward the end of understanding cultural process. It is important to note that types created by this method treat all available attributes as equal, ignoring the fact that quite different processes may have been responsible for their formation. The taxonomic system is a static approach. Deetz (1967:48) suggests that aboriginal tool producing systems are based on two separate kinds of production operations. He terms these additive and subtractive processes. A lack of concern for process in subtractive systems using the principle of affinity for establishing groups results in the classification of different stages of manufacture as multiple types, thereby obscuring inter-assemblage relationships.

Brew (1946:46) adds the cautionary note that types based on arbitrary categories are imposed on the collection by the investigator. If a second investigator examining the same collection did not use the same attributes as the former, a risk exists that a totally new set of types will be created.

Rouse's analytic classification system is based on the principles of linearity and affinity. He attempts to establish a system that does away with the arbitrary nature of classification so that each investigator constructing classifications will achieve similar results. Each mode, the basic analytic unit, is conceived of as an attribute which relates to a distinctive cultural practice. Rouse fails to tell us how we are going to be able to choose those attributes which are distinctive of a particular cultural practice from the total number of available attributes. Nevertheless, his suggestion that modes can be

linked on the basis of their temporal occurrence and thereby reflect the behavioral stream of the aboriginal artisan is a useful concept. Using this principle of linearity, the artifacts that exhibit the same sequence of manufacturing steps or modes are then grouped together on the basis of their shared lineal and affinal modes. Theoretically, Rouse's approach provides a solution to the problems inherent in the arbitrary selection of modes for the formation of classes. Unfortunately, in practice he was unable to fulfill his own goal. In the example of the flint dagger type previously cited above, Rouse failed to relate the selected attributes to distinctive conceptual or procedural modes. Rather, he simply compiled a trait list which he intuitively ordered sequentially. In fact, his types do not differ in nature from those of Krieger. These lists are characterized by obvious exclusions of many technical attributes. In summary, Rouse's approach, as practised, is a descriptive morphological approach quite similar in nature to the taxonomic approaches previously discussed.

Both Bordes' and Semenov's typological systems are probably intended as analytical classifications. However, both fall short of this mark for the same reason. Bordes uses a very old classification system based on type of impactor for the purpose of defining technique. This classificatory approach can be traced as far back as W.H. Holmes' study in "The Handbook of Aboriginal American Antiquities" (1919). Other workers--Pond (1930), Ellis (1965) and Crabtree (1972A)--also define technique in the same way. The major problem of this approach is that by emphasizing one class of variables, impactor type, the significance and systemic relationships between other classes of input vari-

ables are ignored, factors which may be of equal if not more significance than impactor type. Thus Brodes' concept of technique is no more than an historical index type itself, which will shed little light on underlying processes.

Semenov also selects his attributes to demonstrate his theoretical objectives. He relates micromorphological features to particular behaviors of work activities through the post-priori approach. Semenov's wear patterns are treated as "end products" and little attention is paid to their developmental histories.

In summary, the idea of using both principles of organization, affinity and linearity, as suggested by Rouse, represents a marked improvement over strict taxonomic approaches based only on the principle of affinity. The principle of linearity provides a means for linking seemingly unrelated diverse forms into their respective patterns in extractive systems. The concept of linearity, following the steps of the tool maker, provides a means for linking the diverse forms which are created in extractive systems. Although Rouse advocates the use of this principle, he was unable to create a meaningful classification, apparently for lack of sufficient interpretive analogs.

E. Concepts of Culture

Typologists seldom make explicit their theoretical foundations. Nevertheless, by examining their assumptions, the methods and objectives of individual classification systems can be related to their respective intellectual traditions. The existing conflicting traditions owe their source to the unsettled state of anthropology. The concept of

culture is the agitator in archaeological debates. With the exception of Semenov, who was grounded in the general Marxian view of the history of technological development, the schemes of Krieger, Rouse, Spaulding and Bordes are meant to define ethnographic cultures in prehistory. Most researchers agree that culture should be the primary taxonomic unit in prehistory but there is no consensus concerning the issue of culture dynamics.

1. Krieger

Krieger's (1944) objectives are to explain cultural relationships and to reconstruct the mental patterns of extant groups. At first these were Rouse's (1939 and 1960) objectives; however, he subsequently revised his position realizing that it is impossible to reconstruct mental patterns (Rouse 1972).

These early typologists were greatly influenced by the ideas of Kroeber, particularly his concept of the superorganic (see Kroeber 1952:22-51). Culture, through its normative transmission processes within individual societies, is thought to be the causative agent responsible for remains that reflect clustered attribute distributions identifiable on material remains.

Binford (1965) attacked this position which he designated "the normative school of culture". His basic objections are that unverifiable historical and psychological factors are involved in assumptions about the nature of ideational transmission between generations and social units. A central idea employed the normative school is the idea of "culture centre". Cultural relationships are viewed as flowing from such centers and mirroring ideational norms. The neo-

evolutionists (Aberle 1960, Binford 1964 and White 1954) suggest that the science of culture is concerned with the observation and ordering of empirical facts which are to be expanded in cultural rather than metaphysical terms (Kaplan 1965).

2. Spaulding

Spaulding (1953) was aware of some of the problems that characterize the Kroeberian tradition. He shares in common with Leslie White the view that culture occurs in societal contexts and is characterized by symbolizing activities which result in patterned behavior. He suggests that culture can profitably be analyzed using scientific methods and is explainable in terms of its own properties, using quantitative methods. Dunnell (1971) correctly points out that the formation of types is a qualitative, not a quantitative process. Artifact types will not be discovered by the use of statistical procedures, for types are based on classes of attributes which are chosen qualitatively. Without question qualitative classes should be quantified through the use of some sort of measuring scale whenever possible.

Spaulding's scheme, like all subsequent classification approaches including numerical taxonomy (Clarke 1968), fails to set forth an explicit set of rules for choosing classes of attributes. All attributes are not comparable, for some are produced as a consequence of different mechanical and behavioral events. Consequently, when different kinds of attributes are placed in the same population for statistical manipulations the results will be skewed.

Both Krieger and Spaulding assume all variables are produced as a consequence of cultural activities. Rather than attempt to solve

specific problems emphasis is placed on the selection of a multitude of different kinds of attributes in the hopes of finding useful ones so that the artifacts can be placed in a time-space grid. Spaulding pays lip service to production and use systems; however, it is impossible to define systems without defining the rules of class formation. Thus the taxonomic schemes suggested by Krieger and Spaulding in no way reflect their views of culture.

3. Rouse

Rouse (1972) advocates that behavior is largely controlled by culture. Artifacts are thought to reflect decorative, technological and functional variables which are produced by different behavioral subsystems. These behavioral subsystems are governed by alternative or overlapping sets of norms. From this point of view it follows that artifacts exhibit three separate kinds of modes and should be classified three separate times if the objective is to find behavioral systems. However, Rouse fails to tell us how to operationalize his systemic approach in order to tackle practical problems.

Historically Rouse's 1939 and 1960 studies are significant, for this is where he develops the concept of mode. The distinction between conceptual and procedural modes is not particularly clear. If I correctly understand Rouse's intent, he is suggesting that artifact classifications should be based on two kinds of inferred relationships. Procedural modes are inferred relationships derived from one kind of phenomenological reality, i.e., morphology, to a past phenomenological event--human behavior. Rouse treats conceptual modes as it they are independent from procedural modes. Examples of conceptual modes are

material, shape and decoration.

The construction of conceptual modes would entail making inferences two levels removed from the observable physical remains. In other words, conceptual modes are inferences made from procedural modes. The fundamental problem of the modal approach is that Rouse has failed to examine the question of how morphological features relate to behavior. He assumes that there is a 1:1 correlation between a unit of behavior or an idea and a phenomenological entity. Furthermore he does not establish a set of rules for distinguishing between technological, functional and decorative attribute classes. Certainly decorative as well as functional attributes may have a technological basis. In short, although Rouse subscribes to a systemic viewpoint, his classification procedures are not systematic. He does not make explicit how one is to choose analogs in creating procedural and conceptual modes or how his intuitively-selected attributes actually relate to human behavior.

4. Bordes

Bordes does not indicate which anthropological theorist he follows. Nevertheless, his views clearly fall within the French structuralist anthropology tradition. Bordes' system is designed to characterize and distinguish prehistoric cultures on the basis of the technological structures which are created through the use of specific techniques.

Bordes assumes that societies are characterized by social solidarity and that production techniques are governed by normative behavior (see Harris 1968:464-513 for discussion of social solidarity).

Furthermore, ethnic groups can be distinguished on the basis of the frequency distribution of types. Bordes' justification for comparing types is not clear. From Bordes' writings it would seem one must assume a steady static view of culture which produces the same number of all artifacts during all seasons year after year.

Bordes' structuralist position has been questioned by the neo-evolutionists on the basis of a functional argument. Bordes (1961) identified five distinct Mousterian traditions. Lewis and Sally Binford (1966 and 1969) countered Bordes' thesis with a falsifying argument (cf. Popper 1959) that individuals participate differentially in society as well as seasonally. They suggest Bordes' typology represents a blending of activity units which obscures their functional significance. In attempting to demonstrate their thesis the Binfords assigned Bordes' types functional qualities. Subsequently a factor analytic program was used to cluster the types. These clusters are interpreted as different "tool kits" used in dissimilar functional activities within the framework of a seasonal round. The Binfords' use of factor analysis has been criticized by Johnson (1972:373) on statistical grounds, but perhaps their grossest error is their failure to consider the temporal and spatial aspects of the artifacts chosen for comparison. Also, their functional interpretations are untested hypotheses. There is no assurance that the clusters of types actually are tool kits; consequently, the debate goes on.

5. Semenov

Semenov (1964) draws his theoretical inspiration and justification from Karl Marx. Marx advocated the historical study of the

material bases of socio-economic organization. He thought the active relationship between man and nature would be revealed through technological studies. Semenov expanded this theme by developing an inferential methodology for detecting how technological items functioned in prehistoric societies. Semenov hypothesized, " ... traces of wear make it possible to define what work was done with a given tool, that is, how the object being studied was used and on what material" (Semenov 1964:2). Although Semenov did not develop his classification system beyond the type level, it is designed to organize data in reference to the above hypothesis.

Bordes (1967 and 1969A) criticizes Semenov primarily on the basis of his superior knowledge concerning tool production patterns. Semenov (1971), in his reply to Bordes, raises a number of issues about Bordes' own classification system and his concepts concerning tool making. However, the major substantive point Semenov makes is Bordes' failure to consider functional criteria in establishing his types. Bordes (1961:1) believes that function has and will remain enigmatic for a long time.

In contrast, MacDonald and Sanger found that the application of microscopic analysis to the Debert collection from Nova Scotia, which contained a variety of different kinds of materials, has a limited application. They state:

> "It was found that the hardness of the materials, or their silicious content, affected directly the types of observations that could be successfully made. The harder materials (ranging between 6 and 7 on the Mohs scale) retained clear traces of tool manufacture but only poor evidence of tool use."
>
> (MacDonald and Sanger 1968:237)

In conclusion, Semenov's hypothesis has yet to be demonstrated as valid beyond a limited number of specialized instances, mainly dealing with soft ground stone tools.

In summary, although several concepts of culture have been alluded to in the classification systems reviewed, they have had little relevance in archaeological research. Even though each of the classification systems are framed in different terms they are all based on the same underlying premise--culture determines variation in artifact form. In all cases the concept of culture is employed as _a priori_ truth, not something to be tested against the archaeological record; and simply plugged into the above formula. Such an approach precludes the meaningful study of relationships between cognition and material variables. Since the variables determining variation are not stated and sources of external variability are not considered, all of the approaches examined are inconsistent taxonomic systems. In other words, morphological attributes selected for type formation are not based on any sort of theoretical construct, but are selected arbitrarily. All of the approaches outlined above will henceforth be referred to in general terms as the morphological approach.

F. Conclusion

When prehistoric archaeology began in Europe in the 1800's there were no stone tool making societies with the exception of gunflint makers. In America metal implements had replaced those produced out of stone. Thus, from the beginning, prehistorians have relied on the "data language" generated by ethnographers and experimentalists in

both America and Europe for describing stone implements. In the process of communicating their information concerning technological operations and resulting morphological features, an attribute data language has been created which is employed by present-day prehistorians for defining types.

Explanations which are advanced regarding particular morphological and technological attributes have not developed in total isolation from events occurring in other disciplines. Indeed, jargon has been borrowed from ethnography, geology and material science and through time has accumulated to form a descriptive data language. However, there are a variety of problems associated with the use of formal and technological attributes which undermine the validity of the form function hypothesis, which the typological schemes advanced here are designed to facilitate. Some of the major problems include: (1) the lack of an underlying theory and the use of conflicting theories of fracture; (2) problems of isomorphism in both formal and technological attributes; (3) poor and inaccurate ethnographic analogs; (4) the use of uncontrolled experimental analogs; (5) the intuitive selection of attributes by using projective analogy; (6) failure to distinguish between cultural and non-cultural variables.

In addition to these fundamental problems which undermine the validity of attribute systems, the form-function hypothesis is characterized by a number of problems. This hypothesis assumes each tool form has a single function and furthermore denies the possibility that diverse forms can have the same function. In short, it assumes that human behavior can be characterized as a unidimensional rather than the

more realistic approach as a multidimensional phenomenon.

From a systematic point of view, the following quote from Robert Dunnell's Systematics in Prehistory is most pertinent. He states,

> "For a classification to be accepted as valid, it must be internally consistent. Decisions in the formulation of the classes incorporated in it must have been made with reference to a unified set of rules. Whimsical choices are not permissible for they destroy the system nature of the classification and negate any possibility of explicitly stating the relationship between classes. Examining a classification for internal consistency is an evaluation of the structure of the classification. If a classification is found to be inconsistent, it cannot serve as a classification because it does not provide any means of stating the relations between classes."
>
> (Dunnell 1971:60)

Confusion also exists in the schemes reviewed as to what constitutes phenomenological as opposed to ideational aspects of classes. A distinction is not made between the rules necessary for admission to a class, e.g., significata and the data denotatum. For example, the denotatum (intuitively selected attributes) are abstracted from the artifacts and then used to define the artifacts in essense, a circular argument, e.g., teleology.

In view of the fact that "artifact types" are created without the use of culture, cognition, or material theory, the type as it now exists must be rejected as an invalid construct. As the existing morphological approaches focus almost exclusively on outline form and selected technological attributes, they are of little utility in explaining processes responsible for changes observed in diachronic sequences.

The morphological approaches which have been reviewed have little utility in distinguishing between trade, diffusion, migration from *in situ* development. It is for this reason that an alternative model building approach is presented in the next chapter.

CHAPTER III

A COGNITIVE MODEL FOR DERIVING CULTURAL INFORMATION FROM STONE TOOLS

A. Introduction

The proper subject matter of most prehistoric archaeology is populations of artifacts, features and other physical data which survive in the archaeological record. From these remains the prehistorian attempts to reconstruct how social groups adapted to the situations in which they found themselves. The remains left behind at archaeological sites have been transformed in one way or another by prehistoric groups and individuals attempting to achieve or fulfill some sort of goal. Thus before archaeologists can establish meaningful classification systems, or make inferences concerning human adaptations, they must postulate the operational nature of the systems which lie behind formal variation of material products.

B. Review of Deetz's Conceptual Model

In Chapter II it was argued that although typologists make reference to conceptual aspects of tool making, this has actually not played a prominent role in their thinking. Rather, a static approach is favored where attention is focused almost exclusively on placing morphological forms into categories without consideration of the processes which led to their formation.

The conceptual approach of James Deetz (1965, 1967 and 1968)

has provided an intellectual impetus for a number of subsequent works (Longacre 1970 and Hill 1970). He suggested that artifact form can be explained by variation in conceptual frameworks or "mental templates" of tool makers. Deetz states:

> "The idea of the proper form of an object exists in the mind of the maker, and when this idea is expressed in tangible form in raw material, an artifact results. The idea is the mental template from which the craftsman makes the object. The form of an artifact is a close approximation of this template, and variation in a group of similar objects reflects variation in the ideas which produce them."
>
> (Deetz 1967:45-46)

Subsequently Deetz (1968) further defines this position by incorporating Rouse's concept of mode as the cognitive and behavioral equivalent of attributes. Deetz has made a large step in the right direction in his conceptual approach via his insistence that the consistent occurrence of attribute clusters on artifacts represents culturally conditioned decisions on the part of the tool makers. However; like Rouse, he sets the impossible objective of attempting to define emic categories (mental templates) rather than etic categories which are far more subject to investigation in prehistory.

He argues that one of the goals of cultural reconstruction should be to explain the existence of attribute clusters. In other words, he is interested in looking at the reason why certain attributes were chosen and not others. As an example of this kind of "psychic approach", Deetz cites his own Arikara Ceramic analysis from the Medicine Crow site in south-central Dakota.

> "By treating the attributes separately with respect to the manner in which they formed clus-

> ters, it was shown that a high degree of clustering was a function of the regulation of attribute choice within a framework of matrilineal descent and matrilocal residence. When these features of the social structure were altered in later components, there was a corresponding decrease in the degree of clustering, and the attributes exhibited a more random mode of occurrence. Attribute choice was conditioned by training of daughters by mothers, and when this transmission of attributes between generations was disrupted, there was also a change in reasons for attribute choice. Women who once selected certain combinations because they were modal for their lineage and residence group later made their choice with greater freedom, a trend reflected in a lower degree of patterning in the resultant artifacts. Furthermore, the total design vocabulary of the people underwent change, and a somewhat different modal set of attributes was produced in later components."
>
> (Deetz 1968:33)

Exception must be taken to the above viewpoint. Deetz argues that variation in artifact form is simply a reflection of the ideas which produce them. This viewpoint is an overstatement of a much more complicated picture. Not infrequently there is a gap between the artisan's ability to conceptualize a material item and his ability to produce it. This is not surprising, for different individuals do not have equal motor skills to materialize their ideas. Consequently, formal variation of artifact form can sometimes also be explained by differential abilities to execute imperative procedural rules during the production process. Furthermore, by arguing that one of the goals of prehistory is to discern why certain attributes were used instead of others, Deetz has constructed an overly simplified view of the human mind. He argues that the key for understanding attribute clustering in Arikara ceramics is interruption in the transmission processes between mother

and daughter. Certainly this may be one of the major factors which could affect the kinds of decisions made by potters. However, a host of other hypotheses could be advanced to explain the same phenomena. For example, one could argue that the frequency of the use of brass pots increased through the time period under consideration, and what we see is a replacement process.

What Deetz has done, probably inadvertently, is to argue for a unidimensional rather than multidimensional approach for explaining human behavior. He suggests that experience acquired from the mother via transmission is significant in establishing dominant attribute patterns. It is contended that there are a great many factors other than one's mother which may influence the kinds of decisions in the production of attributes. In contrast to Deetz's goal of determining why attribute clusters were chosen, a goal more amenable to investigation would be to examine how attribute combinations cluster together, and what kinds of inferences can be made from these combinations concerning both material and non-material aspects of former life ways. Perhaps the why questions should best be left to the theologians!

In summary, although Deetz's model is an advance over the previous morphological approach, it is based on simplifying assumptions concerning the human mind which are not acceptable. Neither the morphological approach nor Deetz's conceptual model enable the analyst to distinguish between such fundamental processes as diffusion, migration, trade, and _in situ_ cultural development when analyzing artifacts.

C. Cognitive Model

It has become clear that the concept of culture has no heuristic value as presently used in archaeology. In Chapter II it was argued that although typologists make reference to conceptual aspects of tool manufacture, the aims, methods and implications of cognitive anthropology have not been given serious consideration and entail rethinking the concept of culture (cf. Tylor 1969:13). Rather than rehash overworked definitions of culture, a more profitable avenue of research is to postulate how the individual's cognitive system operates, and for the purposes of this paper to explain the cognitive organizational principles which underlie tool manufacture.

The concept of culture has meaning at primarily three different levels (cf. Young 1973). Since each individual is unique and has different sets of plans, goals and memories, the total set of cognitive models is regarded as the individual's culture or his mazeway (cf. Wallace 1961:16). The next level of culture refers to the shared experiences, plans, goals and memories of interacting social groups. With the exception of Semenov's (1964) study, the classification schemes previously analyzed are designed to cope with this level of abstraction. The operational assumption is made that similarity in material culture forms reflects shared mental and behavioral patterns. The third and highest level of culture of concern to anthropologists is the characteristic shared in common by all societal groups. Semenov's concern with the evolution of work is focused at this level of abstraction.

In their quest for cultural information, prehistorians have commonly ignored the role that the individual plays in the production

of artifactual materials. Since the analytic tools, i.e., classification systems, have focused almost exclusively on the second level which emphasizes shared similarities and dissimilarities, variations in artifact forms have been ignored in favor of pursuing the normative view. Consequently, the factors which underlie formal similarities and variability have not been subjected to systematic investigation.

The two highest levels of culture outlined above are based on the preceding underlying level. Thus a middle level abstraction concerning normative trends in culture, such as are commonly used by prehistorians, can be accurate only insofar as its underlying levels are valid (see Feibleman's (1954) theory of integrate levels, footnote 2, page 71). Since it is obviously the individual who produces and uses material remains, it is clear that the significance of the individual should not be ignored in studying intra- and inter-assemblage variability. Thus in order to study societal normative tendencies it is imperative to examine the relationships and frequency of occurrence of individual cognitive models as reflected by material remains (this concept to be developed in detail shortly). In other words, one should begin with one's own data base or cognitive models reflected by one's own material remains before making comparisons. This view is at a 180° angle to the common practice in archaeology of beginning with prior definitions of what index artifact types must be present in a given assemblage to gain membership in an elitist prehistoric society. For example, Butler states,

> "In the Northwest, the Old Cordilleran Culture assemblage comprises a locally distinctive point type, the Cascade point, which is often made on a blade, other blade tools, a

> variety of oval knives, and a generally non-distinctive assortment of cutting, chopping and scraping implements, all made of stone."
>
> (Butler 1965:1,127)

In other words, the archaeologist intuitively defines societal norms through artifact types by framing statements in terms of diagnostic and non-diagnostic artifacts. Likewise Bordes (1972:48-50) uses the terms, "typical" and "atypical" or the terms "average", "pure" and "classic" are employed by Agogino and Parrish (1971:111-114). Such terms are simply intuitive value judgments made by prehistorians. A much better approach is to consider the total range and frequency of linked attributes forming decision models in a given assemblage rather than to begin with prior definitions.

D. The Individual

Man is essentially a problem-solving organism and perhaps unique in the animal kingdom with this skill. It is the question of how problems are solved through data processing that is of concern here. Although the human mind poses one of the all-time great unsolved black box problems, inferences can be made concerning its internal structuring and *modus operandi*.

Since I have previously argued that it is necessary to make explicit one's analog sources, I shall begin with a general explanation as to how and why the model presented in Figure 1 was created. Having been confronted with the disillusioning experience of trying to use a traditional morphological approach to classify Alberta's amorphous cobble tool assemblages, I was led to consider the alternatives. Since Don Crabtree seemed to know more about tool production than any-

one else on this continent, arrangements were made to spend the academic year of 1967-1968 learning some of the practical aspects of artifact production. There I learned some things about controlling fracture, but was left in a dilemma, as I was searching for an explanation as to what variables govern fracture morphology. Next I turned to the engineering and glass technology literature and found some of the answers I had been searching for (see Chapter V). As a consequence of my work with Crabtree, as well as my own ongoing practical experimental work, I gradually began to realize that equally as important as the tools themselves are the intellectual processes which are responsible for their formation. So the model which follows is a first attempt to verbalize my own intellectual processes which are used for tool production.

The cognitive model presented in figure 1 has been designed to provide a general picture of the intellectual operations involved in tool production. It should be understood from the outset that the model is an analytical construct and should not be misconstrued as attempting to represent psychological reality. The major value of the model lies in its ability to predict. Although the model is general in nature, it postulates that at least four levels of conceptualization may occur in the production of material objects. Each of the four levels has a phenominological or material representation and, therefore, is subject to scientific investigation.

Previously, it was suggested that one of the prehistorian's primary objectives is to learn how groups adapted to their environment. Human adaptations are no more, or for that matter no less, than the application of a decision model to a particular contextual situation.

Artifacts reflect human decision models and can be defined as a segment of man's material environment which has been used or modified through the application of a structured set of principles. Artifacts exhibit through their physical attributes and the relationship between these attributes, the materialization or objectification of a portion of a cognitive system held by their maker. Thus in order to understand adaptation it is necessary to search for or investigate the organizational patterns used in tool production and use.

It should be understood from the outset that cognitive systems are open-ended, dynamic and have feedback loops which qualify them as cybernetic systems. At any given time or place there are a range of alternative decisions open to the individual tool maker. The boundaries of this range are determined by a number of factors. Foremost of these factors are the available materials, familiarity with material properties, the individual's place in society, past tool making experience, creative ability and motor skill. In order to get a better grasp of these systemic relationships, the discussion will not be turned to defining the major components and relationships between components in the decision-making model depicted in figure 1.

The organism is continually bombarded with sense data from the external world which is continually processed.

> "(1) As a result of being bombarded with sense data ("D") from external reality (R) (which includes both data from the natural environment and ongoing culture experience), the individual receives various sensations ("S") or messages via the receptors in the central nervous system. This constitutes the Input Stage (I).
>
> (2) Many of these sensations are processed, along with memory data ("M"), in the higher

> centers of the brain. This we call the Interior Transformation Stage (I)."
>
> (Young 1971:19)

The tool making craftsman engages in a logical operation at this internal transformation stage, which is here called previsualization, in attempting to solve technical problems. Once a need for solving the problem is conceived there may be variety of alternative options open which are not comparable in terms of efficiency. Therefore, prior to setting a goal or course of action the known plans or alternative strategies (in Memory Storage) will normally first be evaluated. Before a goal can be set, a decision must be made as to the tool shape which is necessary, and an appropriate strategy or plan composed of a set of procedural rules must be selected which can then be used to produce the desired tool. There is by necessity a feedback relationship between the various aspects of the overall strategy. The procedural rules and any specific goal, as a preconceived goal, cannot be actualized if the wrong set of procedural rules, and hence strategy, are chosen.

There are basically two kinds of goals of significance in tool manufacture. A primary goal is the end objective or the solution of a need. Goals of this type are formed by articulating a set of procedural rules into a plan. Many primary goals are constituted of a series of sub-goals, which are subsets of procedural rules.

Any practising artisan has a repertoire of strategies and rules, derived through tradition and personal experience, which can be articulated in a variety of different ways depending upon the chosen goal. A <u>procedural rule</u> is used to specify the behavioral action which

an actor can undertake for the purpose of fulfilling a chosen goal or sub-goal. If several rules are articulated the successful application of each rule should be considered as sub-goals to the primary goal.

An example of a procedural rule is the successful application of a given amount of force which results in fracture and the materilization of a preconceived shape. In other words, procedural rules are predictive in nature. During the production process decisions concerning procedural rules may be made almost simultaneously at several different levels.

The four levels of organization in the postulated model should be conceived of in terms of Feibleman's theory of integrative levels and rules of explanation previously cited. Each level represents an emergent quality, its cause exists at a higher level and its mechanism at a lower level. In other words, the organization of a level cannot be understood unto itself or be treated as a closed system. If an analyst is to understand or explain a level, he must examine the mechanism or process responsible for the creation of that level. The four levels of cognition involved in tool making are hierarchically structured in a dynamic flow system. Each level of cognition represents an emergent quality but can best be understood in light of the levels which are superior and subordinate.

The first level of organization is the selection of materials for input into the system. *A priori* knowledge of material behavior must be acquired before an appropriate selection can be made for the achievement of a goal. Each local environment places constraints on

the kinds of goals which can be achieved due to the fact that resources are not equally distributed in all environments in the same way.

The second level is concerned with the decisions made in combining input variables. There are six major classes of input variables: (1) material, (2) holding position, (3) form, (4) angle, (5) kind of impactor and (6) form or shape of material, which are combined to induce mechanical events. Particular combinations of input variables are employed to induce and manipulate wave and fracture mechanics (see Chapter V) in the formation of desired kinds of fracture surfaces. These surfaces are characterized by attributes and their range of variation is indicative of the input variables which led to their formation. The repeated occurrence on an artifact of the same cluster of attributes is indicative of the successful application of a procedural rule and can be thought of as a purposeful constructional unit.

The internal structural relationships of constructional units of the same kind as well as of different kinds is the third level of organization which requires decision-making on the part of the artisan. The direction of work, the angle and the spacing between constructional units as well as the sequencing between units must be considered.

The level of organization to be considered concerns the decisions required to achieve external relations or the outline form of artifacts, i.e., the final form. The rules for operationalizing the length, width, thickness or the external parameters of the completed goal are now considered.

Once a goal is previsualized as a consequence of interior transformations in the cognitive systems, neuro-messages are sent to the muscles which constitutes the output stage.

> "(4) a response on the part of the muscles which result in some form of behavior ("B") ... occurs at the external stage (E). Behavior forms part of (and to a certain extent, changes) external reality (R) which is defined as everything that exists outside the boundaries of the organism."
>
> (Young 1971:19)

As the tool maker continually scans the tool-producing operations with his senses, two kinds of information are fed back into the mind to be placed in memory storage and to undergo interior transformations. The behavioral data that occurs when procedural rules are applied is transformed into sense data which is labeled F1 in Figure 1. The other type of information, F2, which is converted into sense data, has to do with the physical reality or state of the artifact acted on by one's behavior. It will be noted that as different levels of procedural rules are applied to materials during the artifact manufacturing process, different kinds of information will be returned to the mind for subsequent processing.

While the technician is working there is continual <u>information feedback</u>. He scans and evaluates the surface of the piece under construction. Morphological cues are given values which the artisan uses for the selection of the most relevant rule next to be applied in attempting to achieve the primary goal. Nevertheless, with the successful application of each rule, limits are placed on the kinds of rules which can subsequently be applied.

Considerable variation sometimes exists between the sub-goal and what actually materializes. <u>Contingency</u> sub-goals and procedures are then used to rectify the situation. Not infrequently, in the early stages of manufacture, the artisan may use a strategy of linking

a series of contingency plans in attempting to achieve the primary goal, for he has the least control over his material in this stage of manufacture. If the specimen is badly demaged in a way which would prevent primary goal achievement, the specimen may simply be abandoned. On the other hand, an entirely new goal may be selected.

Thus, in summary, it can be seen that a number of decisions are required, dealing with different levels of information, for producing an artifact. The entire process involved in solving such technical problems as artifact production is here referred to as a decision model. The ramification of the decision model approach for artifact classification will now be considered.

E. Classification

In the past prehistorians have concentrated their efforts on describing artifacts, not the decision models which they reflect. In an extractive industry such as stone tool production, many separate specimens may be created as the constructional units are detached. A great deal of information has been ignored by focusing attention only on "finished artifacts."

In reconstructing the decision models used by craftsmen in extractive industries, the analysts must investigate the relationship between constructional units. Although the finished artifact may reflect a number of these kinds of relationships, it is unlikely it will reflect the total decision model. For example, a few of the material components which might be represented in a projectile point production system would be cores, large flakes, preforms, pressure flakes and finally the projectile point itself. It would be very difficult to look at a projectile

point and determine the kind of core from which the flake on which the point was made happened to be detached.

The material representation of decisions framed in a decision model are reflected by constructional units, i.e., flakes which in turn are characterized by attributes. Thus the analyst's objective is to determine the kinds of constructional units and the sequential ordering when possible between constructional units in defining a decision model. It should be noted that most specimens will reflect more than one constructional unit due to the negative and positive aspects of fracture.

Archaeologists who have been faced with the task of evaluating shifts in artifact forms in diachronic sequences have based their evaluations primarily on one set of criteria--artifact outline form. Technological variables have been taken into consideration only to a very minor extent despite the fact that external formal variation represents only one of the several levels of decision-making. However, all levels of the decision-making model must be taken into consideration if more complete reconstructions are to be attempted. As has previously been indicated, there are frequently a number of alternative ways an individual outline form can be achieved. Thus in attempting to determine if attributes A or B belong in the same class there must be a demonstrated relationship in the kinds of procedural rules used in manufacture. The major advantage of classifications based on decision models over the morphological approach is that the former recognizes that formal variation occurs on at least four distinct levels, not just one. <u>Thus in making cross cultural or inter- as well as intra-assemblage comparisons, specimens must reflect the same classes of information at</u>

<u>all levels of organization in the decision model, not just similarity in external form as is the current practice</u>.

In defining the decision models reflected by stone implements in an assemblage of artifacts, the analysts may use a statistical approach to define normative tendencies. Such an approach enables the investigator to construct probabilistic statements concerning patterns reflected by material remains. Each level of organization in the decision model results in the production of attributes and constructional features which are characteristic only to that level. Decisions concerning materials can simply be recorded by noting the rock type used such as metaquartzite, porcelinite, Knife River Flint, petrified wood, etc. The second level of analysis results in the production of technological attributes. Under this rubric, attributes such as the shape of the bulb of force, occurrence of rib markings, flake shape, shape of the distal end of the fracture front, conoid fracture segments, and platform alterations such as crushing are considered. The third level of organization referred to as microstructure examines the relationship between constructional units. Platform alterations, spacing between flakes, shape of ridges on flakes, areas in which retouch occurs on flakes, are but a few of the classes of observations which can be made at this level. The fourth level is concerned with macrostructure or properties relating to outline form of specimens. Categories such as length, width, thickness, angle of notching, and outline shape of modified edges are but a few of the classes which fall within this level of analysis. Other levels can be added to the model if they augment the analyst's research design. For example, a fifth level could

be added to the model which would consider function.

Perhaps the major advantage of the decision model approach is that it enables the investigator to quantify the decisions involved in tool making and from there the analyst can build outward, forming higher levels of abstraction as research progresses, rather than beginning with preconceived notions as to what is a type or an archaeological culture.

The decision models used by stone tool craftsmen are not thought to be reflective of the cognitive maps of the whole society. It seems likely that stone tool manufacture was only participated in by a small segment of society--the lithic artisans. Furthermore, the amount of individual variation in the application strategies and procedural rules among a group of individuals in a human society is an almost totally unexplored area of research. In view of these problems it would be most expedient in the beginning to apply the decision model typological approach to sites with good context and clear-cut stratigraphic divisions. In constructing decision models, it must be demonstrated that there is a consistent clustering of the same set of decisions recognizable on several artifacts.

The analysts will not be able to reconstruct total decision models in many instances. Due to the non-random distribution of raw materials and food resources, technological operations often were conducted whenever expedient. For example, it might be more expedient to shape biface at a quarry and transport the bifaces to a second locality, rather than transporting a large amount of raw material to a second location. The bifaces might be heat treated and made into projectile points. Thus by searching for decision models used in production, the

analyst is forced to consider the kinds of technological operation carried out at individual sites. Information of this variety is most useful for reconstructing site specific economic activities.

When faced with problems of evaluating changes in diachronic sequences which could possibly be explained by such diverse processes as migration, diffusion, trade, and _in situ_ development, the decision model approach offers at least a partial solution. For example, if there was a shift in projectile point shape from level A to B, it would be possible to sort out which of the processes was involved. If migration were involved, one would anticipate there would be little overlap in any of the organizational levels of the decision models used to produce the points. Diffusion would probably involve only changes in one level or organization, certainly not at all levels of decision-making. On the other hand, trade items, if from a distinctly different social group, might appear as representing distinctly different decision models. However, one would anticipate that such items would be rare and easily distinguishable from functionally similar forms produced locally, although this need not always be the case. In the case of _in situ_ development, it can be anticipated that only the procedural rules relating to macro-structure would change. In other words, although for some reason it might be necessary to change the outline form of the artifact, other levels of organization may remain constant. Admittedly, the analytic procedures outlined above are on shaky ground--but their applicability could be tested in contemporary societies.

Certainly the most complicated level in the model is the second level of organization. It is not subject to anthropological ob-

servational techniques. This level of organization postulates that fracture morphology is dependent upon the independent input variables. As previously indicated, no one has ever established what the range of morphological variability is under a controlled set of input conditions. Rather than prematurely beginning the task of classification on an archaeological assemblage, it will be more expedient to test this part of the proposed analytic system experimentally.

---

[2] Integrative Levels

"1. Each level organizes the level or levels below it plus one emergent quality. Thus the integrative levels are cumulative upward . . .

2. Complexity of levels increases upward . . .

3. In any organization the higher level depends upon the lower . . .

4. In any organization the lower level is directed by the higher . . .

5. For an organization at any given level, its mechanism lies at the level below and its purpose at the level above . . .

6. A disturbance introduced into an organization at any one level reverberates at all levels it covers. . . The time required for a change in organization shortens as we ascend the levels.

7. (Not applicable in present study)

8. The higher the level, the smaller its population of instances ...

9. It is impossible to reduce the higher level to the lower . . .

10. An organization at any level is a distortion of the level below . . .

11. Events at any given level affect organizations at other levels ...

12. Whatever is affected as an organization has some effect as an organization.

Rules of Explanation

1. The reference of any organization must be at the lowest level

which will provide sufficient explanation . . .

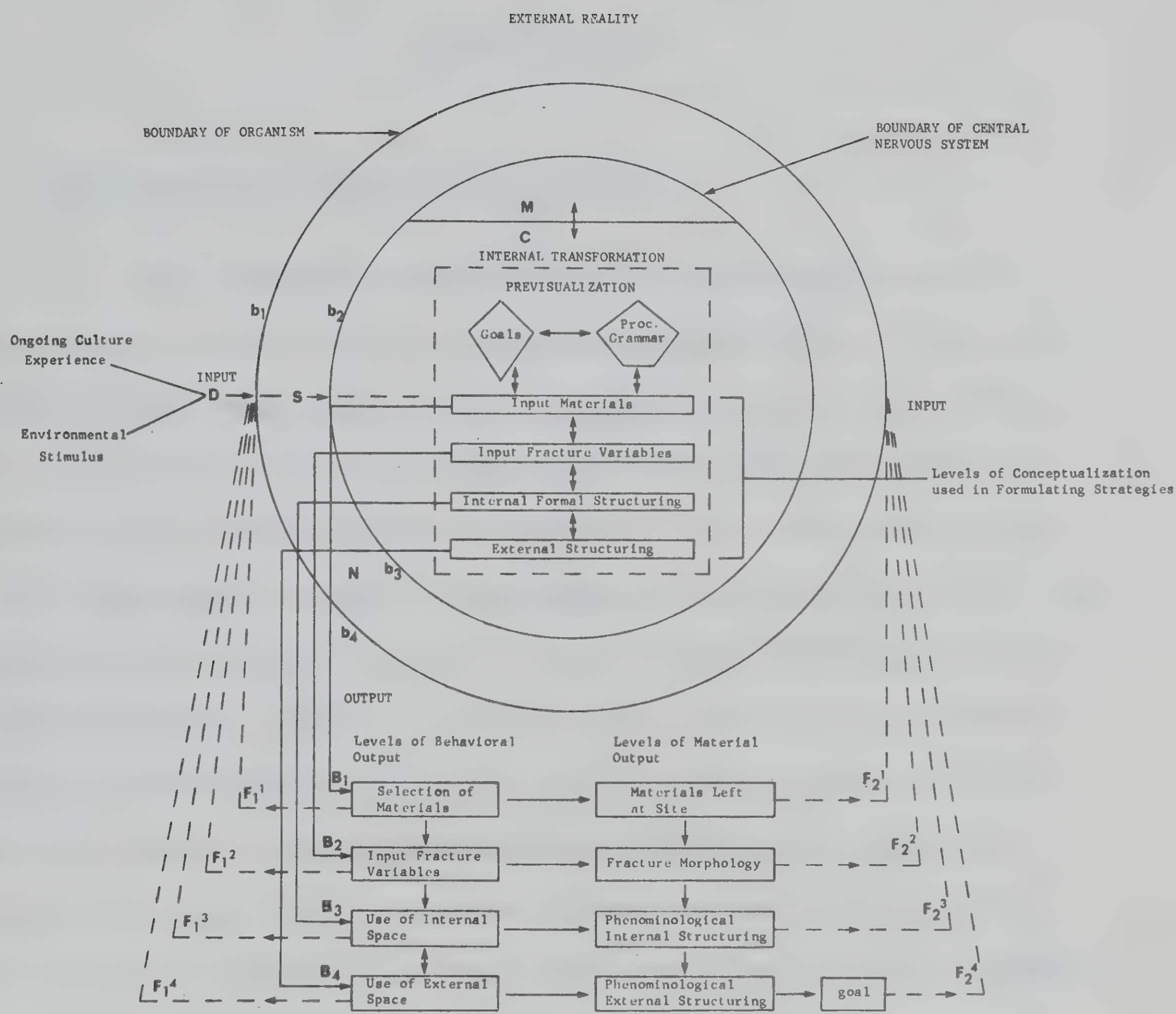
2. The reference of any organization must be the highest level which its explanation requires . . .

3. An organization belongs to its highest level . . .

4. Every organization must be explained finally on its own level . . .

5. No organization can be explained entirely in terms of a lower or higher level."

(Feibleman 1954:59-64)



D	SENSE DATA	B	BEHAVIOR
S	SENSATIONS	b	BOUNDARY
C	COGNITIONS	F_1	ACTOR'S EXPERIENCE OF HIS OWN BEHAVIOUR
M	MEMORY DATA	F_2	ACTOR'S EXPERIENCE OF ALTERATION OF EXTERNAL ENVIRONMENT
N	MESSAGES TO MUSCLES		

Figure 1 Cognitive Model

CHAPTER IV

RESEARCH DESIGN

A. Introduction and Theoretical Orientation

The interaction between human cognition and the material environment, a major part of which can be characterized as "technology", results in the production of what is commonly called material culture. The latter term is generally characterized by techniques and material items such as stone artifacts and computers. By concentrating scientific investigation toward the development of explanatory models of the dynamics at this interface between cognition and environment, an understanding of human adaptation can be gained. During the last decade ecologically-oriented prehistorians have made major contributions toward the problem of explaining the development of civilization by focusing on the dynamic interaction between man, plants and animals in a systemic framework (Byer 1967; Clark 1954; Jennings 1973; MacNeish 1958; and Ucko _et_. _al_. 1969). These initial successes are based on interdisciplinary research designs. Systemic models have been constructed which integrate ecological and cultural theory for the purpose of generating cultural ecological explanations. The applicability of specific models has been tested against the archaeological record. However, studies in prehistoric technology have not been carried out with the same kind of systematic rigor.

Man's primary method of altering the natural environment is through the use of tools. Natural materials such as rocks, plants and animals can be transformed into useful materials which form the basis of a multitude of adaptive patterns. Tools are used to collect and process material which can be employed to fulfill such fundamental needs as food, clothing and shelter and on levels beyond subsistence they are employed to create such things as art objects and musical instruments. It can readily be seen that tool making behavior is the cornerstone in a pyramid of adaptive material culture patterns. Technological innovations can and have had far-reaching ramifications for other kinds of patterns. Since technology is a major intervening link between man and environment, a change in tools and tool using processes can considerably alter man's other adaptive relationships and conversely, a shift in environment may require a change in tool making and using behavior. For these reasons the present study focuses exclusively on tool making adaptation and even more precisely on one category of implement--stone tools, which dominate the archaeological record.

A general systemic interdisciplinary model has been proposed (Chapter III) which can be used for explaining particular tool making adaptations. This field of study focuses on cognition and mechanical relationships. Two bodies of theory are integrated into the model for the purpose of explaining variability in artifact form. In Chapter III the position is taken that tool making from the cognition side of the equation can best be understood in terms of the kinds of decisions made by the tool maker in producing implements. However, the analyst, in attempting to reconstruct any decision model, must have an understanding

of the interplay between input variables, the mechanical principles used to alter materials and the resulting output. Fracture dynamics and particular morphological features are discussed in detail in Chapter V.

Unlike cultural ecological models which have contemporary analogs, the stone tool producing systems used by ethnographic societies are now extinct in most parts of the world. Consequently, the prehistorian who wishes to understand tool making production systems is left with the task of postulating the nature of the systemic relationships between cognition and materials, for it is the systemic relationships which are responsible for the products the archaeologist wishes to classify--artifacts.

There are two ways the model proposed in this study can be partially tested experimentally. Replicative experiments could be conducted for the purpose of demonstrating the applicability of a particular set of cognition-mechanical relationships, which set could then be used as an analog for explaining a specific kind of artifact. However, the major problem in attempting to use the experimental replicative approach for demonstrating the validity of a systemic model is that the human being provides a major source of random variability. It is impossible for the flint knapper to strike twice in a row with the same amount of force, at an identical angle and velocity. The second and more viable alternative for testing the model proposed in Chapter III is to design an experimental machine system which simulates the human model. By eliminating the flint knapper and substituting a machine counterpart, the classes of variables thought to cause formal variation

in the system might be identified and controlled.

From the outset it should be made clear that the flaking machine ("Stainless Steel Indian") substituted for the flint knapper does not exactly duplicate the human being from an operational point of view. It is a closed system without information feedback. There are several major advantages of simulating open systems with closed system models. Simulation systems can be used to eliminate unnecessary sources of variability, a situation which enables the analyst to control the input and to evaluate the effect of a given set of input variables on the output. Although a closed system employed here lacks information feedback, it can be preprogrammed to carry out a specific set of decisions in the same way consistently. Thus by gaining control of the input variables, the morphological effect, i.e., attributes and attribute clusters, can then be evaluated in light of a specific set of input variables.

The machine simulation system developed for this research is designed specifically for testing the second level of the open system model. The objectives undertaken in this experimental pilot study are to determine how and if the postulated classes of input variables of holding position, torque, force, material and impactor affect output, i.e., attribute morphology; and whether or not morphological attributes can be used to identify input variables. By fulfilling this objective a two-fold purpose can be achieved. Not only will the second level of the proposed open system model be tested, but in addition the study provides a partial test of the value of the traditional morphological approach by examining the range of morphological variability which

results from specific input conditions. A factoral block research design which contains no missing data categories has been used to facilitate analysis in fulfilling the above objectives. More will be said about these matters in Chapter VI. It will now be expedient to describe the dynamic loading device ("Stainless Steel Indian") and the controls placed on experiments.

B. The Stainless Steel Indian

There are a variety of ways in which dynamic loading machines or, for that matter, pressure flaking machines, can be built to simulate the human model. In designing the Stainless Steel Indian, two major sets of factors were taken into consideration. A key limiting factor was cost, as the project had been carried out on an exceedingly limited budget provided by the Department of Anthropology of the University of Alberta. The other major consideration was to come up with a design which could facilitate the major classes of variables (force, holding position, torque, impactor and material) at a variety of different levels for each class.

Earl Eichenlaub, director of the University of Alberta Technical Service Machine Shop, was consulted with these prerequisites in mind. After consideration of two designs suggested by Eichenlaub, these specifications were met. The dynamic loading machine was subsequently constructed at the University of Alberta's Technical Services Machine Shop (see Figure 1).

The major moving part of the machine is a metal bar (1), into which different kinds of impactor collars with standardized size

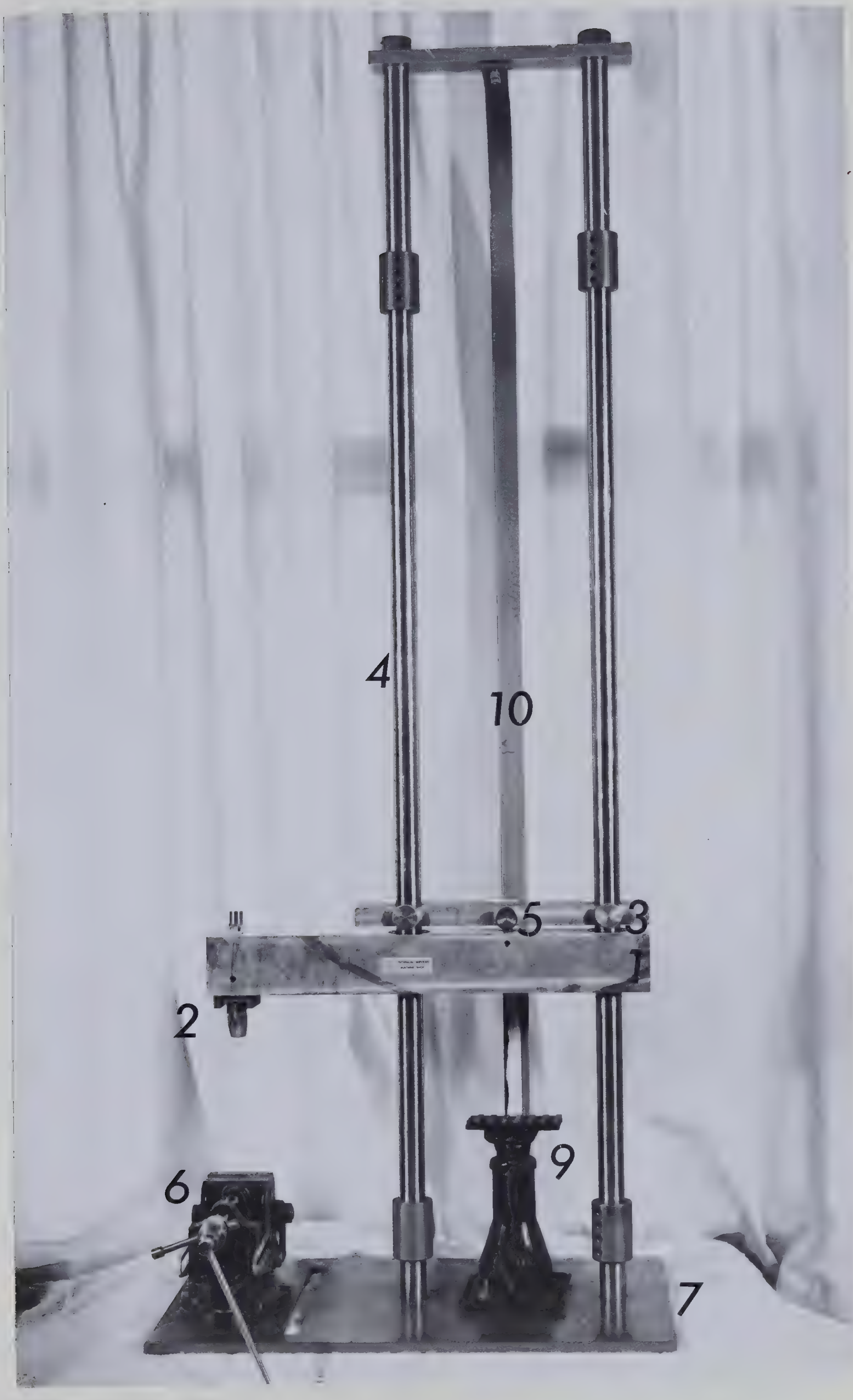


Plate 1 Dynamic Loading Machine; front view

chucks are inserted (2). The operating principle of the machine is that the metal bar can be locked into place with a lock mechanism (3) at any elevation on the guiding metal rods (4). By pressing the trigger release (5), the bar free-falls from the set elevation, restricted only by the friction of the bearing which guides the bar on the metal rods. The specimen is held in a Palmer vise (6) which is attached to the base plate (7) with movable shoe mounts. One of the major advantages of the Palmer vise is that it permits a great deal of flexibility for holding positions. It can be opened four inches and has a turning radius of 360°. If it is desired, the vise can also be pulled up to a 45° angle, permitting adjustment of the angle of the specimen to be impacted. The pressure put on any specimen is controlled by a torque wrench (Torch Indicator, with a ¼-inch drive which is attached to the vise handle by the means of a special slotted socket). The dial is calibrated in inch pounds.

A small adjustable truck jack with a rubber pad on top (9) is centered between the two guide rods for the purpose of stopping the impactor. On the side metal support (10) which stabilizes the metal rods a metal scale is attached (11). A metal pointer (12) which is secured to the back of the impactor bar permits elevation readings to be made of how far the impactor is above the specimen to be impacted.

C. The Experiments and Experimental Controls

A multitude of experiments can be conducted with a dynamic loading machine, even though any specific machine will place certain limitations on the range of experiments which can be conducted. The

Plate 2 Dynamic Loading Machine, side view

question can, therefore, be legitimately raised as to why or how the 144 individual experiments listed in Appendix I were selected from all other possibilities. The answer is two-fold. As a consequence of the past five years of practical experience, it has become clear that there are fracture features which simply cannot be understood in terms of the core, blade and flake interpretive model which is presently widely accepted. Consequently, experiments were designed to produce known as well as unknown morphological features which could be placed in a comparative quantitative framework.

Before the experiments reported on were conducted, a small pilot project was initiated, for three reasons. On the one hand it was necessary to get an idea of how effective the "Stainless Steel Indian" would be and, if so, what range of variables could the machine handle without "self-destructing?" Secondly, the pilot study provided a preview of the kinds of results or morphologies that could be produced, and a rough idea of the range of possibilities for making explicit prior knowledge gained from practical tool making experiences. In addition, the experiments were designed to shed light on a controversy which currently exists in the literature. Don Crabtree states in his definition of technique that,

> "The technique represents the application of the method by the worker with suitable fabricator to form the stone into his mental conception; each technique produces distinct flaking characters and technological attributes."
>
> (Crabtree 1972:2)

Others who have conducted fewer experiments have cast doubts on the idea that individual techniques result in identifiable attributes.

Epstein (1964:163-164) indicates it is very difficult, given the present state of knowledge to differentiate between pressure and percussion flaking with any precision. Likewise McWhinney (1964:203-205) admits he is unable to distinguish between hammerstone and billet struck flakes. Consequently, different kinds of impactors were incorporated into the design.

Also, as previously indicated, there has been no general consensus concerning the significance of materials on tool making patterns. Both Bordes (1971:212) and Leakey (1960:31) believe that materials have little or no effect on tool morphology, while Goodman's (1944) study indicates the opposite. In this study materials selected for dynamic loading were chosen with care.

Glass was used as a control material because a considerable body of technical literature has been developed for the analysis of glass fracture. Obsidian was selected because it was available, it is most similar to glass in structure, and a great many aboriginal tools were made from obsidian. Quartzite was chosen not only because it is structurally different than glass, i.e., it is anisotrophic, but also because I have yet to describe several thousand quartzite tools from the Cypress Hills in Alberta. Thus the experiments conducted will eventually provide an interpretive framework for actual aboriginal collections.

The major classes of variables included in the experimental design are Force, Impactor, Holding Position, Material and Torque. Each class of variables was divided into levels or particular discrete units. Three levels of force were incorporated into the experiments so

that the impactor fell 10, 20 and 30 cm., designated F_1, F_2 and F_3 respectively. Originally, impactors made out of three different materials were to be incorporated into the experimental design, but it was discovered during the pilot study that the sandstone impactors consistently broke on impact rather than the specimen being struck. Consequently only moose antler impactors, I_1, and fine-grained quartzite impactors, I_3, were used. Three materials were selected for use--glass, M_1, obsidian, M_2, and quartzite, M_3. Six holding positions were chosen, H_1 . . . H_6 (see adjacent illustration). Three torque levels were incorporated into the experimental design: T_0, no torque; T_1, forty inch lbs., and T_2, eighty inch lbs.

These variables were all held constant with the exception of one variable in each of the experiments, which are numbered consecutively 1--144. Each experiment was repeated five times in an attempt to determine if the results were replicable. Thus 720 specimens were impacted during the course of the project.

Since it is necessary to hold all variables constant except one in a factorial research design, an attempt has been made to eliminate sources of variability of standardizing the input components. The three materials selected for fracture (glass, obsidian and quartzite) were cut to the same size, 5 x 5 x 1 cm. or 2" x 2" x 3/8". The glass specimens are "float glass" and were purchased from Bahry's Glass, Edmonton. The initial cuts on the glass were made with a glass cutter. Since it is impossible to get a square cut with a glass cutter, one edge of the glass squares was trimmed with a diamond saw so that the specimens would have an absolutely flat surface on which the impactor

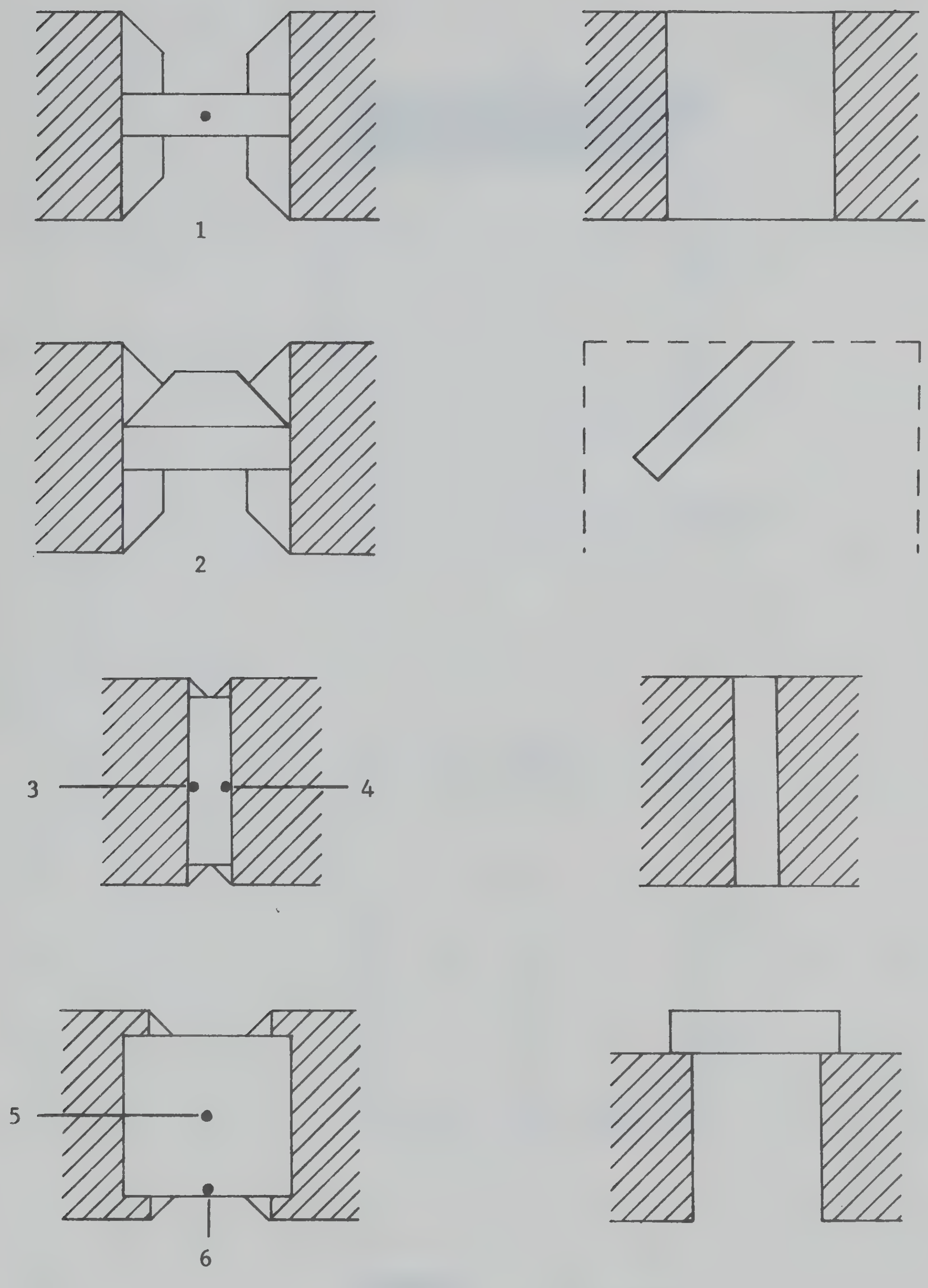


Figure 2   Holding Positions

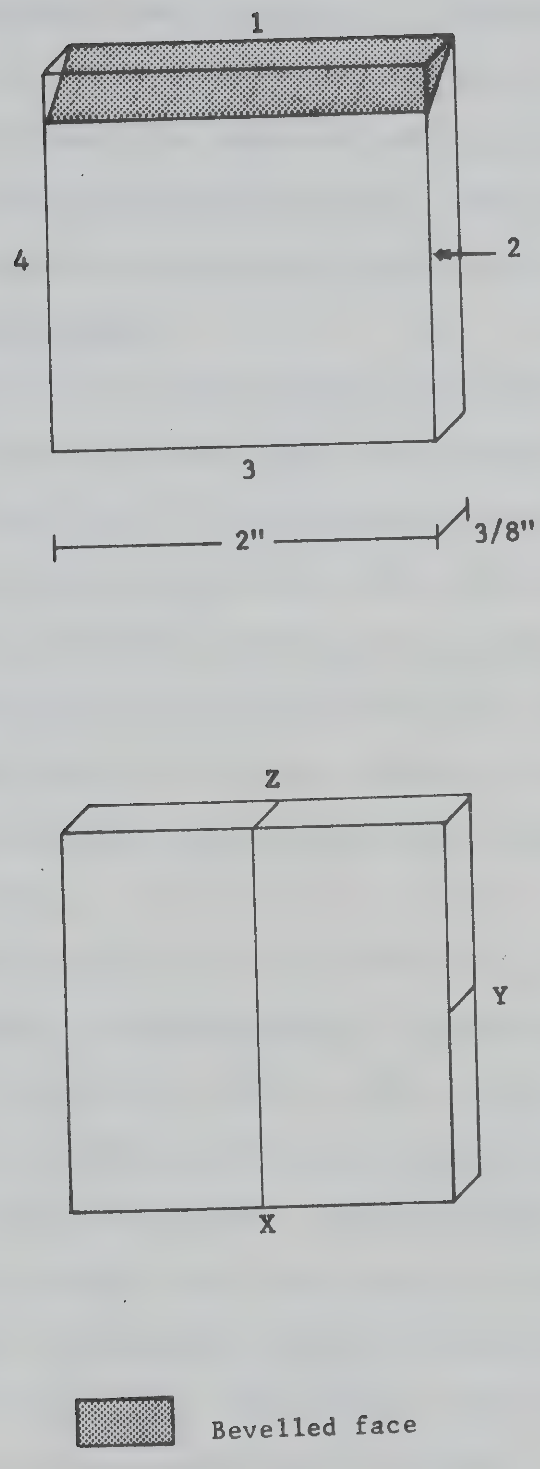


Figure 3 Specimen Nomenclature

could strike. In addition, the lateral edges on the specimens used in holding positions 1 and 2 were buffed with a carborundum sanding belt machine so that the force placed on the specimens by the vise would be evenly distributed. The Department of Geology generously made available their rock saws for the project. Three diamond-bladed rock saws were kept operating continuously for a period of five months preparing the rock specimens.

The stone materials came from different source areas. The obsidian used came from two separate areas in southeastern Oregon. Some of the obsidian employed is flow obsidian from five miles north of Hines. The other obsidian used for the experiments was collected from the surface of alluvial fans 16 miles east of Hampton, on the north side of Highway 395. It would have been better if all the obsidian cold have been from a single source, however, a sufficient amount from either source would have necessitated a 1,000-mile trip back to the source area.

The quartzite used for the experiments was derived from the Cypress Hills Formation, a fluvial deposit of Oligocene age which caps the Cypress Hills in southeastern Alberta. The quartzites were collected from the northwest edge of the Cypress Hills plateau from a talus slope on the north side of Highway 48. Vonhof (1965:150) has classified the Cypress Hills into several major rock groups. The specimens selected for the experiments are metamorphic quartzites which are extremely hard and have an oily luster on a fresh surface. The color varies from white to light brown; some are banded and varicolored. In aboriginal times these metaquartzites were preferred for tool production.

The hard hammer impactors are made out of argillite from the Cypress Hills Formation. They were removed from cobbles with the aid of a hydraulic press (courtesy of the Physics Department) and a one-inch diamond core barrel. The antler impactors are made from Alberta moose antler tines. The tips of the impactors were milled down to a uniform size on a lathe at the Technical Services machine shop. They were uniformly rounded and have a diameter of 1 cm. Since the argillite impactors are so hard, a diamond stylus had to be used to shape them; while a carborundum stylus was quite sufficient for shaping the antler tips.

When the impactors were glued into the impactor collars, which fit into the impactor bar, their weight was not the same. Consequently, a weight of 178.3 grams, the weight of the heaviest impactor, was selected as a constant. If the mounted impactor's weight fell below this constant, lead strips were attached providing the appropriate weight. When the impactor chuck was inserted into the impactor bar the lead strips were attached to the top of the bar directly over the impactor chuck, so the weight of the impactor arm would remain constant.

The jaws of the vise were lined with lead plate rectangles 0.2 cm. thick. These plates provided a much more adhesive surface for holding the specimens in place than the normal steel jaws of the vise. If the edges of the specimens were slightly uneven, as was the case with some of the glass squares, the edges sank into the lead, thus permitting a uniform stress field to develop over the entire surface of an edge rather than on only the high points of the edge, which is what would happen if lead plates were not used. As the lead plates were

malleable they rapidly became deformed and were exchanged frequently.

Small plastic bags--"baggies"--were placed in the vise and behind the lead plates encompassing the specimen to be fractured. The mouth of the bags were left open so they would in no way interfere with the normal fracture process. When specimens were impacted and the glass shattered, all the segments were contained by the plastic bags.

Before the specimens were fractured they were assigned their respective experiment numbers (see list of experiments). Since each experiment was duplicated five times, a number between 1 and 5 was assigned to indicate the run number of a particular specimen in a given experiment. After the specimen was impacted it was removed from the vise in its plactic bag and placed in a small meat tray. The meat trays were catalogued in the upper left-hand corner with a pen. After the specimens were impacted and catalogued the resulting fracture features were coded in I.B.M. cards for statistical manipulations.

D. Coding Variables

Considerable care was taken to develop a theoretical framework which could be used to link the attribute classes listed in Appendix II. A fracture dynamic model is developed in Chapter V which provides a framework for the classes selected, as well as class definitions. The questions can legitimately be raised as to how and why particular classes were selected within the chosen theoretical framework. The selection of classes is somewhat but not totally arbitrary. Obviously a very large number of possible classes could be selected for coding. However, classes were developed in reference to morphological features which

occur on the impacted specimens. Three major factors influenced the selection of attribute classes: (1) some familiarity with engineering and glass technology literature; (2) five years of practical experience in making tools and observing their morphological features, and (3) the occurrence of new morphological features which were produced by the dynamic loading machine (S.S.I.) which had not been previously observed.

Each class of variables is scaled. The criteria used in the selection of scales was simply convenience and utility. Essentially two kinds of scales are used: binominal scales are used to indicate the presence or absence of features, whereas when more divisions were believed to be necessary or to be significant, rank scales are used.

The variable code is structured into three major units: (I) control information, (II) input variables and (III) output variables. Columns 1--5 on both cards 1 and 2 are used to record control information. Experiment numbers are entered in columns 1--3, while column 4 is where the run number of a given experiment is entered. Card numbers are recorded in column 5. Input variables are listed in columns 6--10 on card number 1. Output variables are entered in columns 10--80 on card 1 and in columns 6--10 on card 2. By following the procedure of recording both the input and output variables on the same set of computer cards, correlation studies can be made between input and output variables, which is one of the major objectives of the present study.

CHAPTER V

FRACTURE DYNAMICS

A. Introduction

The proposition has been advanced that technology products or material culture items are created as a consequence of an interaction which occurs between cognition, behavior and material. Consequently in attempting to explain material culture, it is necessary to be both well versed in cognition theory as well as the theory of materials. The purpose of this chapter is to synthesize some of the major theoretical constructs which have relevance for explaining fracture dynamics in general, as well as the fracture features which were experimentally produced. The chapter has been divided into sections in attempting to fulfill these objectives.

In Section C an attempt is made to explicate the theoretical constructs and auxiliary principles which can be used to explain fracture processes in stone tool production. In Section D, the morphological features experimentally produced (see Appendix II), as well as several fundamental kinds of fracture features which were not produced in the present experiments but are critical for an understanding of lithic technology, are explained in light of the theoretical propositions advanced in Section C.

A large body of literature has developed which pertains to

fracture in such diverse fields as mechanical engineering, rock mechanics, glass technology and metallurgy. Major theoretical differences exist between disciplines, and little effort has been devoted to resolving these discrepancies. Considerable difficulty was encountered in evaluating this literature, as many of the arguments are framed in mathematical and statistical terms. Arguments are evaluated in terms of whether or not they explained the phenomenon encountered during the course of this study. Ideas are presented without citing the mathematical formulae to which they relate. In short, the strategy opted for in the present Chapter has been to provide a broad, general overview of some of the major available ideas which can be used to explain fracture features produced by lithic artisans, as it is felt that the same set of ideas can be used to explain rock and glass failure (cf. Bieniawsky 1966:1-27).

B. Literature Review

Three studies have recently appeared in the archaeological literature concerning the theory and principles which govern fracture morphology. Kerkhof, Freiburg and Muller-Beck (1969) were the first to postulate that the mechanisms controlling Hertzian fracture and resulting fracture features in the stone worker's debris exhibit similar morphological landmarks and, therefore, must be related. The Hertzian cone concept will be developed later in the Chapter.

Speth (1972) reported on the mechanical basis of percussion flaking in American Antiquity. Subsequently, Faulkner (1972), in his Ph.D. dissertation, Mechanical Principles of Flintworking, directed a number of valid criticisms at Speth's study which need not be reviewed

in detail here. As Faulkner correctly pointed out, Speth's work is non-experimental, and he encountered difficulties as he lacked firsthand familiarity with the data he was attempting to explain. Nevertheless, Speth's article is an important pioneer effort, as he introduces for the first time ideas concerning wave mechanics and provides an excellent bibliography.

Faulkner's (1972) study is largely devoted to synthesizing major theories, principles and concepts and types of analysis currently available in engineering disciplines which can be used in the analysis of brittle fracture. Simulation experiments of Meso-American blade manufacture were performed in polarized light, using the principles of photo-elasticity to determine the intensity and direction of stress. Fracture and resulting morphological features of the replicated Meso-American blades are explained in light of Poncelet's theory of fracture. As will be seen, exception is taken to Faulkner's use of Poncelet's theory, nevertheless, his study is a much needed basic contribution which articulates a number of fundamental concepts relevant to fracture dynamics which occur nowhere else in the archaeological literature.

C. Fracture Theories

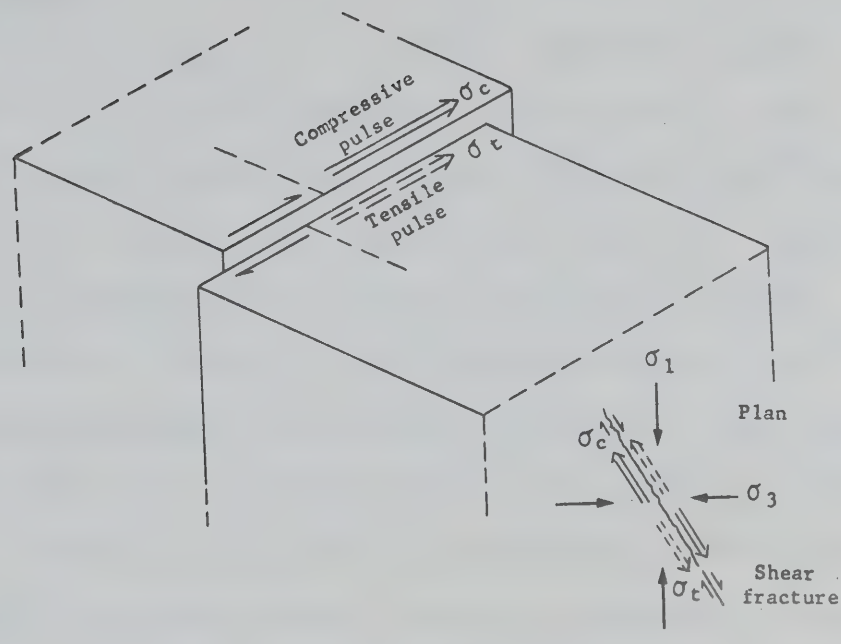
1. Background Information

Before proceeding to the task of outlining the major theoretical orientations, it will be expedient first to define more specifically the kind of problem under consideration. A distinction is commonly made in material science between static and dynamic loading. If force is applied to a solid over a relatively long period of time it is said to be statically loaded. Dynamic loading occurs when force is rapid-

ly transmitted to the surface of the material. Examples normally given of dynamic loading are when force is induced by impact or explosion (Rinehart 1966:547). Instantaneous impulsive loading can be achieved by pressure, as is demonstrated by Crabtree's (1968) high speed photographic experiments in which the initial detachment of an obsidian blade took only 1/1,200 of a second. Emphasizing the difference in loading rate, Speth (1972) suggests that percussion and pressure flaking are fundamentally different. Faulkner (1972) has pointed out that the same fundamental processes underlie both pressure and percussion flaking. The rationale for this suggestion is based on the fact that flakes produced by both pressure and percussion exhibit the same kinds of morphological features.

The materials most commonly used for stone tools are brittle solids. As Mott (1967:23) indicates, there are two major classes of solids: crystalline and amorphous. The basic difference between these two classes of materials is in the way their atoms are arranged. Amorphous materials used in tool making, such as obsidian, are isotropic, and have ". . . the same properties in all directions . . ." (Dictionary of Geological Terms 1962:266), and do have well defined structural arrangements. Crystalline materials which have different properties in different directions are called anistropic (Dictionary of Geological Terms 1962:17). Some flaked stone implements are made from anisotropic materials such as quartzites that have discontinuities, e.g., bedding planes, that cause physical properties to vary in different directions. Although such bedding planes influence the nature of fracture, nevertheless, the same body of theory can be used to explain fracture

A



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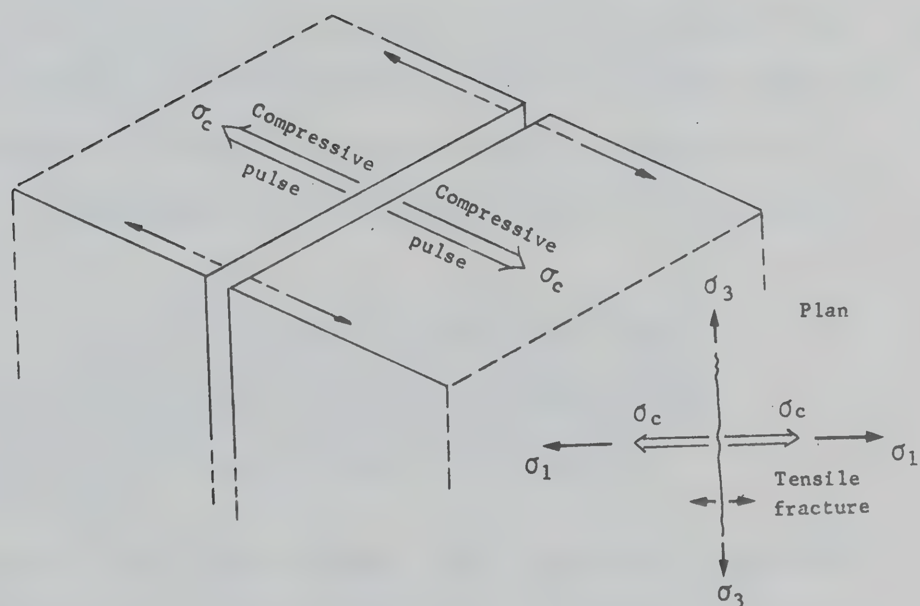


Figure 4 Fracture Models
A. Shear Fracture Block Diagram;
B. Tensile Fracture Block Diagram (after P. J. Syme Gash 1971:364)

features in both isotropic and anisotropic materials.

2. Material Failure

When brittle solids such as glass are subjected to dynamic loads greater than their strength can withstand, failure occurs as the material does not stretch. Shand (1959), Rinehart (1966) and Gash (1971) indicate that there are two common ways in which materials fail. These are known as tensile and shear failure (refer to Figure 4). In shear failure, particle motion is directed from the opposite directions, so that particles may be pushed past one another, resulting in a shear fracture. In tensile failure particle motion is also directed from two opposite directions; however, in this case the particles are pulled apart.

Stone tools have much greater resistance to compressive stress than tensile stress. Aboriginal innovators undoubtedly found the means of inducing tensile stresses to overcome the forces of cohesion holding the parts of brittle solids together much easier to master than the far greater compressive strength. Preston (1933:167) supports this interpretation in a discussion on the causes of glass failure when he says,

> "It will be stated here categorically that glass fractures are always rips or tears, that is, tensile failures. Thus we need not normally interest ourselves in shear stresses or compressive stresses, because these do no damage of themselves."

Rinehart (1966:537) indicates that the strength values obtained from strength tests made on rocks are not reproducible and consistent as the same tests are when applied to metals. It is possible,

but not particularly meaningful, to talk about the average strength of rock type. Rinehart cautions that average values of failure can be very misleading and that a large number of specimens should be failed to find the range of failure values.

In a review article on "Strength Controlling Structures in Glass", Ernsberg (1965:122) points out that the ultimate strength of glass is determined by inter-atomic structural bonds. However, the practical strength at which glass fails normally falls well below its predicted theoretical strength level. Several major theories (actually hypotheses) have been advanced for the purpose of explaining empirical observations made on glass failure behavior. The major empirical observations include:

"1. The strength is lower than the theoretical estimates by a factor typically between 100 and 1,000.

2. Fractures always originate at the surface. Strength increases as the size of the area tested decreases.

3. Strength increases as the size of the area decreases.

4. Strengths observed on a series of 'identical' samples are well scattered. Mean deviations are typically 15--20 per cent.

5. Strength increases with rate of stressing, that is, a static fatigue effect exists.

6. There is a threshold stress for static fatigue.

7. Static fatigue disappears in vacuum, in dry gases, and at very low temperatures.

8. Strength increases as fresh abrasions age.

9. Dynamic fatigue is negligible.

10. Strength goes through a broad minimum

at 100°--200° C."

(Ernsberg 1965:123-124)

3. The Griffith Crack Theory

Several competing theoretical orientations currently exist which can be used to explain the above empirical observations. Griffith's (1920) position is currently the most popular of the competing theories although, as Anderson (1959) indicates, it has undergone a number of second-order corrections. Even so, it is still widely accepted in the fields of metallurgy, rock mechanics and glass technology for predicting the strength of materials.

Faulkner has translated Griffith's mathematical presentation into an iconic model which is followed here:

> "According to the Griffith strength theory, fracture is a spontaneous physical change from a state of high strain to a state of fracture. The thermodynamic requirements for such spontaneous changes may be expressed conveniently in terms of the concept of free energy. Free energy (in contrast with bound energy) is energy which is available to do work without causing a decrease in temperature within the system from which it is derived. It is 'free' in the sense that in certain conditions it may be liberated by the system without cooling it.
>
> The second law of thermodynamics requires that a spontaneous process must involve a continuous decrease in the free energy of the system within which that process takes place . . . The Griffith strength theory deals primarily with the nature of the free energy change associated with the fracture process. Fracture involves the creation of free surfaces . . . (and) these surfaces are by nature regions of high potential energy. This surface energy, according to Griffith, is supplied by the strain energy stored in the elastic deformation of the material. When this strain energy is released by fracture, some of it performs work against the

cohesive forces of the material in creating fracture surfaces, whereas the remainder may be expended in the kinetic energy of the separating fragments. Thus free energy associated with a crack at any given stage in its extension is given by the relation: F = S-W, where F is the net free energy, S is the surface energy of the crack, and W is the total work done by the release of strain energy in the formation of the crack. Fracture can occur only by a process involving a continuous decrease in F.

As an example of the release of free energy in crack extension, consider a crack in a thin plate made of some isotropic brittle solid, as shown in Figure 5. The plate is stressed in uniaxial tension orthogonal to the fracture plane, in an attempt to widen and extend the crack. Because the fracture surfaces are widely separated, except at small regions in the vicinity of the crack tips, the attraction between them is negligible, and they may be regarded as free surfaces. As the crack is extended, the shape of the crack tip remains approximately the same, so that the tension-free surface area increases approximately in proportion to the length of the crack. Thus the surface energy involved in fracture propogation is proportional to the length of fracture.

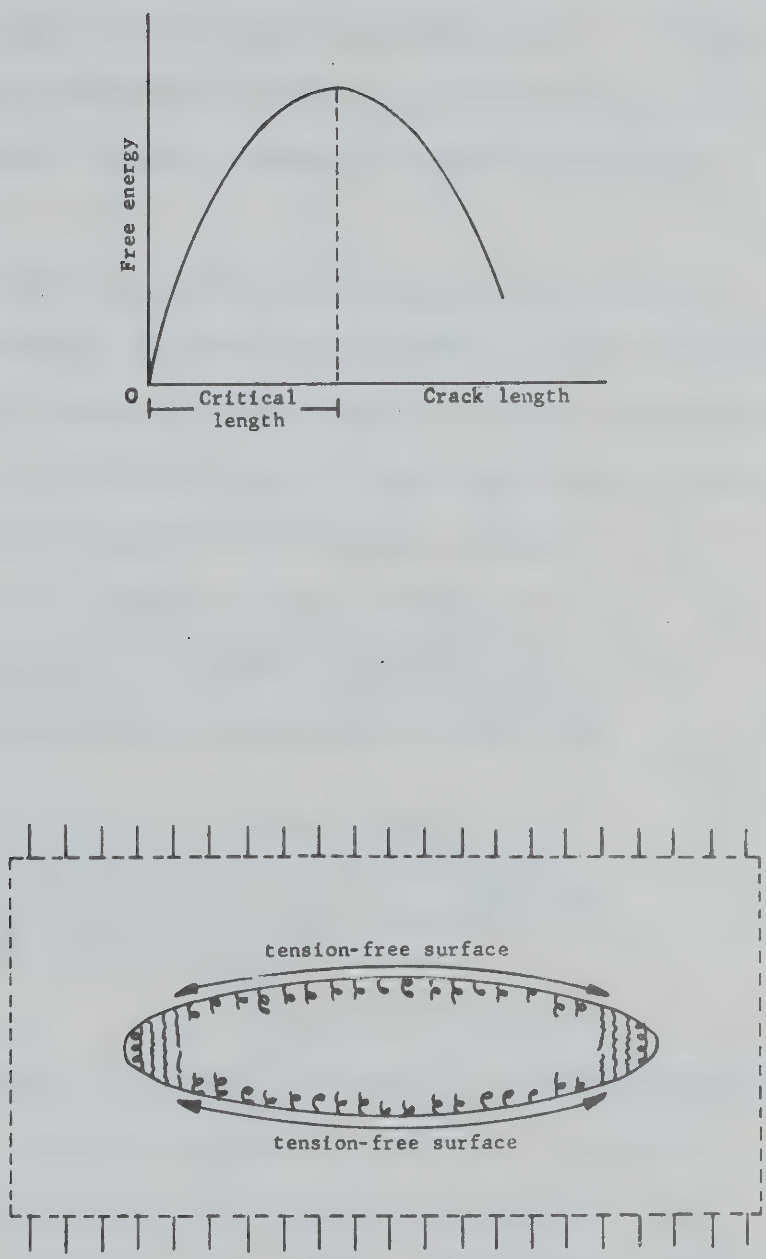
The strain energy released in the extension of this elliptical crack is a rather complex function of the elastic properties of the material, the applied stress, and the length of the crack. Although derivation of that relationship is beyond scope of this discussion, the variation of strain energy with respect to crack length may be readily perceived. If in the extension of a crack, the only dimensional changes were in length, the release in strain energy would be approximately proportional to crack length. Actually, however, as a crack lengthens it also increases in width, thus releasing additional strain energy. Thus the effect of the change in crack length on release of strain energy is multiplied by a similar effect caused by the concommitant broadening of the crack. Therefore the change in strain energy per unit of crack length is continuously increased in crack extension, whereas the corresponding change in surface energy is constant.

> Subtracting strain energy from surface energy, Griffith obtained the expression for free energy in terms of crack length plotted in Figure 5. As illustrated, the initiation of a crack involves an increase in free energy, thus violating the Griffith criterion for fracture. Evidently the initial release of strain energy would be insufficient to account for the corresponding increase in surface area. There is a critical crack length, however, at which the strain energy "catches up" with the surface energy; pre-existing flaws in excess of this length may be extended by a process involving a continuous decrease in free energy. Therefore, although the Griffith criterion does not allow the initiation of cracks by the fracture process, it does permit the extension of certain cracks already existing in the material.
>
> According to Griffith, the presence of <u>microcracks</u> greater than the critical length is a necessary precondition of fracture. Therefore, in a freshly-formed solid which is microscopically flawless, these microcracks must be inherent in the structure of the material . . ."
>
> (Faulkner 1972:61-67)

Ernsberg (1965) indicates that now there is good evidence to indicate that most microcracks which exist on the surface of materials are induced by mechanical damage or microabrasion. Although considerable effort has been devoted to the task of isolating microcracks with the aid of the electron microscope in freshly-drawn glasses, attempts have failed. Ernsberg has suggested that the surfaces of the microcracks are essentially in contact with each other and no light can be scattered in such a structure, and replicating materials could not penetrate them.

Griffith originally postulated that microcracks are randomly distributed. However, until the mechanisms which underlie microcracking are isolated, the frontier of knowledge concerning the distribution of microcracks will remain speculative.

A



B

Figure 5 A. Elliptical Crack subjected to Tensile Failure;

B. Variation of Free Energy with Crack Length (after Sih and Liebowitz, 1968).

4. <u>The Poncelet Theory of Fracture</u>

Faulkner (1972:68-75) argues that Poncelet's theory of fracture is the one most important for lithic technologists, ". . . for it provides a theoretical framework with which to interpret fracture morphology in glass and thus in other similar flint-working materials as well" (1972:68).

Poncelet (1957 and 1958) views fracture as an atomistic process. Fracture is defined in terms of the probability that individual bonds will be broken in the solid. He argues that strength-controlling flaws are generated by the stress itself, through the biasing of thermal fluctuations of the stress field. Ernsberger states,

> "When this concept is given mathematical form by the methods of statistical mechanics (Poncelet (1951)), reasonable functional relationships are derived for strength variability, static fatigue, crack propagation rate and size effect.
>
> It is hardly to be expected that this mechanism can operate when ordinary mechanical-damage cracks are present, but it is a possible explanation for the puzzling and contradictory behavior of damage-free glass."
>
> (Ernsberger 1965:134)

It cannot be overemphasized that the stone materials used by aboriginal man were not perfect, undamaged materials. There are a variety of natural processes which altered the surfaces of raw materials used for tool production. Processes such as thermal fluctuation, chemical alterations, and mechanical erosion such as stream rolling are but a few of the processes which have introduced cracks into material surface which would have affected the strength of materials used for stone tool manufacture. Gordon, Marsh and Parratt (1958) furthermore suggest

surface cracking may be associated with devitrification as micro-crystal growth takes place on glassy surfaces.

F. W. Preston, in his classic paper, "A Study of the Rupture of Glass" (1926), conducted a series of experiments which have since been repeated a number of times. A bicycle ball bearing was simply pressed against a piece of glass, increasing the pressure until failure occurred (refer to Figure 6). He found that when the same ball was used on the same piece of glass failure occurred under different loads. In fact, he categorically states, "Rupture is not decided by any particular stress or strain level."

Since Preston's original experiments a number of investigators have attempted to relate the depth of the fracture origin flaw to the stress necessary to induce failure by employing quantitative methods. Tsai and Kolsky (1967A), in an experimental study using electrical static testers, lowered steel balls with 1/32" to 1¼" radius at a uniform rate onto 6" x 1" square glass specimens. The standard deviation for small indenters was considerably in excess of the larger indenters (Figure 7A).

Tsai and Kolsky (1967B) suggest the frequency of failure curve can also be applied to dynamic loading. Almost all impactors, whether billets, hammerstones or punches, have a contact area of 1/8 or an inch or less with the specimen. Consequently, it can be anticipated that a wide range of stress levels may be necessary to remove a uniform set of flakes.

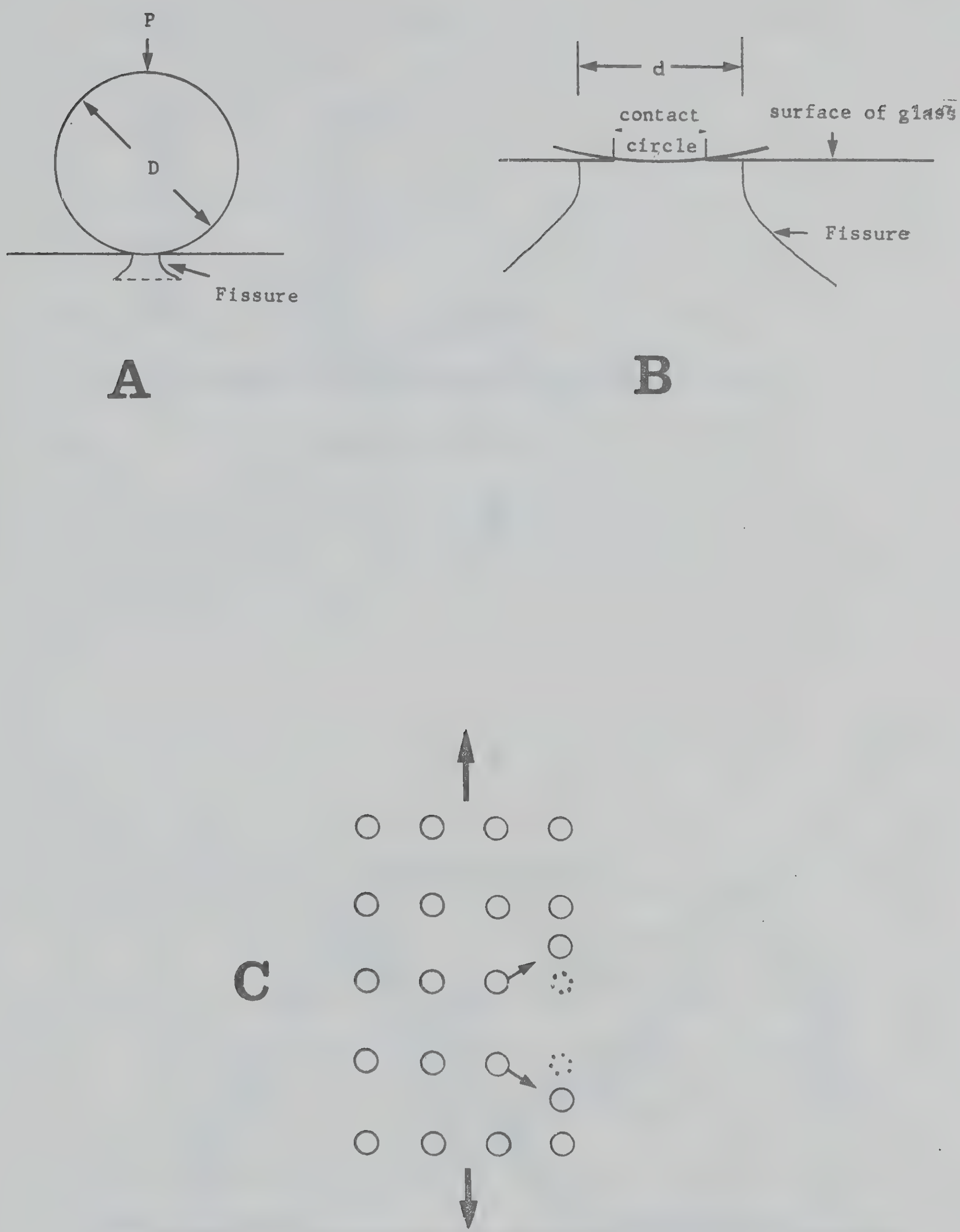
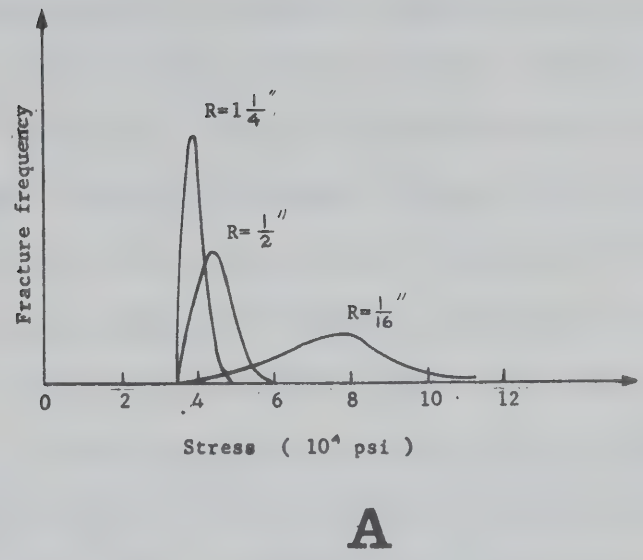


Figure 6 A. Cone Flow formed by a Steel Ball pressed on Glass;

B. Part of same enlarged (after F. W. Preston 1926:236);

C. Diagrammatic representation of Molecular movement when Fracture occurs. The dotted circles represent positions of Molecules before separation commences (after Murgatroyd 1942:158).



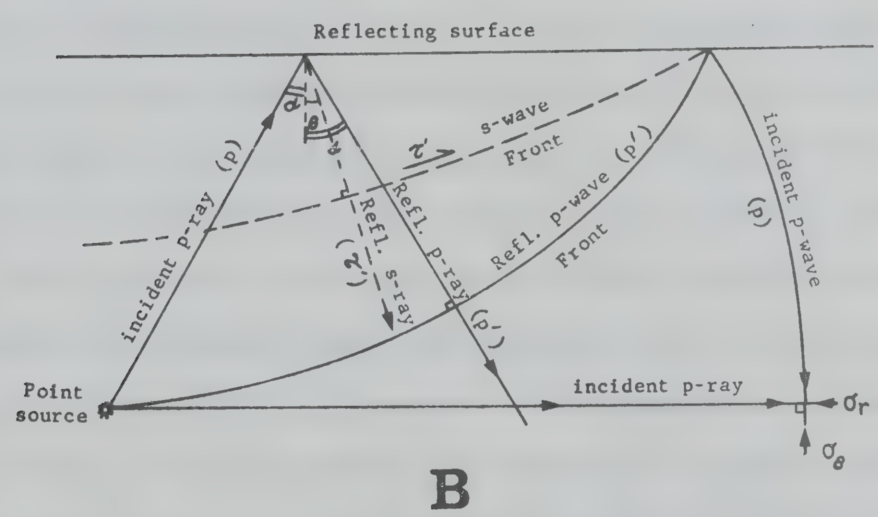


Figure 7 A. Frequency of Failure Curve for Dynamic Loading (after Tsai and Kolsky 1967A);

B. Reflection of P and S Waves (after P. J. Syme Gash 1971:365).

5. Wave Mechanics

When fracture is induced by rapid pressure, dynamic loading or by explosion, stress waves will be produced. When the bonds are broken between particles in elastic solids the particles undergo displacement as the strain energy is released. The particles acquire a certain kinetic energy due to this motion which is partially dissipated in the form of elastic waves (Faulkner 1972:77). There are two kinds of waves known as body waves and surface waves. The body waves are named P and S waves. P waves are primary waves which are compressed as each particle moves to and fro in the direction of propagation. In S or "shake waves", also known as transverse or shear waves, particle motion is at right angles to the direction of propagation (Holmes 1965: 913-917).

P and S waves travel at different speeds because they depend on different material properties. The velocity of P waves depends on density and compressibility; that is, resistance to compression, whereas the speed of S waves depends on density and rigidity, or in other words, resistance to distortion or shearing. As a general rule P waves travel about 1.7 times the speed of S waves. Shand (1954:57) cites Schardin, Elle and Struth, who have indicated that in dynamic impacts on plate glass, longitudinal waves move outward from the point of impact at a velocity of 18,000 feet per second. In the meantime, transverse waves are moving at a considerably lower velocity of 10,000 to 12,000 feet per second. Feder (1956:109) recorded longitudinal waves with a wave length of 29 inches and transverse wave lengths of 13.2 inches in glass.

Surface waves are known as Raleigh or Love L waves. They

were recorded by Tsai and Kolsky (1967B:264) travelling over impacted surfaces at the velocity of 3,000 m/second. It is doubtful if Raleigh waves much affect fracture propagation as their effect rapidly diminishes with depth.

Gash advances the proposition that stress waves are emitted not only from the initial shock, but also from the running fracture. It is thought that the passage of these waves results in the formation of microcracks. He states,

> "It is proposed that the initial failure emits a stress pulse which initiates microfractures, thus forming a plane of weakness which in turn determines the further development of the main fracture. The orientation of the microfractures determines the resulting fracture surface appearance."
>
> (Gash 1971:362)

He goes on to develop a detailed analysis of stress waves in order to predict the geometry of microfracture. For purposes here it will not be necessary to become involved with Gash's predictive methods.

Tensile fracture (refer to Figure 5A) results in the emission of two compressive waves at right angles to the fracture. When these waves arrive at a surface they will either be reflected or refracted. If the surface is bounded, that is, against another surface, the portion of stress reflected at the interface depends on the density (P) and the wave velocity (V) of each medium. When an incident P wave impinges on a free surface at an angle of incidence greater than 0^{o} both a P and S wave will be reflected (Gash 1971:366). The angle of reflection of P and S waves can be predicted by formulae but this procedure will not be applied in the present study. Rinehart (1960) has

developed several alternative models for the form of wave fronts. It seems likely that these models are not particularly applicable to lithic technology as the wave front is likely to change shape during its course due to irregularities in material. Gash, following Schardin (1950), presents a model of a reflecting spherical wave front (see Figure 7B).

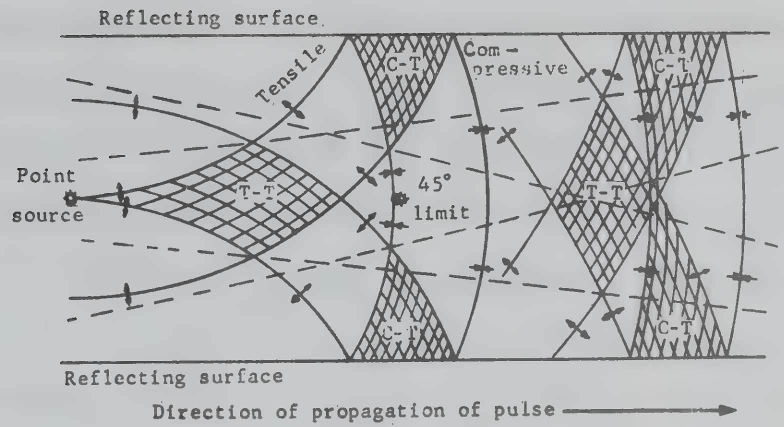
The interaction of incident and reflected waves is thought to induce tensile microfracturing. Figure 8A shows an advancing compressive pulse with a reflected tensile pulse in it's wake. The zone of intersecting compressive and tensile stress is labeled C-T and the zone of intersecting tensile stress is denoted by the symbols T-T. (The above model was constructed for a pulse duration = 0.3 separation of reflectors (t)/P - wave velocity (V_p)(sec.). As can readily be seen, this kind of model provides a mechanism for the concentration of tensile stresses between two free surfaces.

In summary, it can readily be seen that the morphology of a particular specimen, in conjunction with the kind of holding position used by the tool maker, will determine how stress waves are reflected.

6. <u>Speed of Fracture Propagation</u>

Barstow and Edgerton (1939) and Edgerton and Barstow (1941) were the first to investigate the interaction between fracture velocity and wave propagation through the use of high-speed photography. In their 1939 study they reported that fracture has an average maximum constant velocity of 5,040 feet per second. Subsequent workers have investigated the controlling factors which limit velocity. Schardin

A



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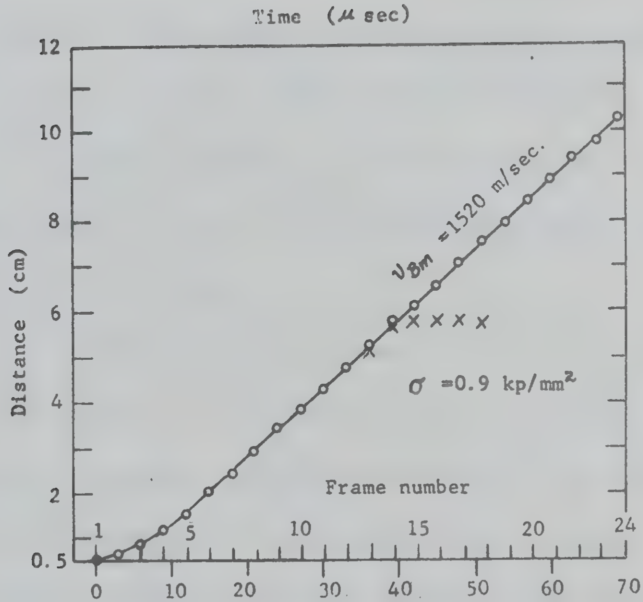


Figure 8 A. An advancing Compressive Pulse with a reflected Tensile Pulse in its wake. C-T = Zone of intersecting Compressive and Tensile stresses. T-T = Zone of intersecting Tensile stresses. Constructed for Pulse Duration = 0.3 separation of reflectors (t)/P-wave velocity (V_p) (after P. J. Syme Gash 1971:370);

B. A complete series of Multiple-Spark photographs showing Fracture Velocity (after H. Schardin 1950:305).

(1959:303-305) notes that glasses exhibit a constant fracture velocity independent of temperature and stress (refer to Figure 8B) where fracture velocities are plotted as a function of distance. At first the elastic energy released by the propagating fracture is not sufficient to maintain the fracture. Energy must be added by heat energy. The time required for this process results in a low fracture velocity. Subsequently, when elastic energy is able to maintain the fracture, thermal effects are insignficant. Velocity continues to increase up to a limit where a constant fracture velocity is achieved in ideal brittle materials.

The maximum fracture velocity depends upon the properties of the material. Schardin (1959) proposes that fracture velocity must be considered in light of the following kinds of energies: surface, kinetic, elastic and plastic. He suggests fracture velocity can be determined by Vf = f(T, P, E, U, X) where Vf = fracture velocity (m/sec), P = density (g/cm.^{3}), E = Young's Modulus, U = Poisson's ratio, and X indicates the residual plastic energy in the material which is not represented by any of the other values.

In percussion flaking lithic artisans use a conservation of energy approach. In other words, if one does not strike a core hard enough a flake may not be detached; therefore, the next blow will be a little bit harder and this process is repeated until fracture is initiated. During early blows, before a desired flake is detached, it seems likely that due to reflected waves, in some cases internal tensile microfracturing may occur, weakening the strength of the material. No attempt has been made to quantify this problem in the present study. Rather, emphasis is placed on explaining the distinct, clear-cut morphological features which can be classified.

D. Fracture Morphology

The fracture features recorded in the output variables in Chapter IV will now be defined in relationship to the foregoing fracture theories. During the coding operation it was discovered that there are a number of different kinds of mechanisms which bring about material failure and all are relevant to the present experiments. The typology of fracture features which follows uses the origin of failure for separating the major classes. Included are: (1) fractures adjacent to the impact, (2) conoid fracture reversals, (3) fracture by flexure, (4) internal flaws, (5) spalling and (6) vise induced failures. There are two kinds of fracture features which were critical in the assignment of the experimental specimens to the above classes. Hackles and ribs (to be defined in detail shortly) are orientation features which can be used to determine propagation direction and origin.

The above classes of mechanisms are not of equal importance in terms of tool making. Fractures adjacent to impact area are by far of the greatest significance for understanding tool making. Certainly classes 3, 4 and 5 occurred in aboriginal situations but were generally produced by accident rather than by design. Consequently, much more emphasis has been placed on defining features in class 1.

1. Failure Adjacent to Impact

Several investigators have noted that different kinds of fracture morphologies associated with the phenomenon known as Hertzian Cone are created at distinct different stress levels, but little systematic investigation has been devoted to outlining the sequence of

events which led to the production of typologically distinct fracture features. Many of the classic fracture experiments on glass were conducted by dropping or pressing steel balls onto the surface of square glass plates. These experiments are useful for our present purposes, as the dynamic loading machine is also based on the principle of a vertical drop. Here an attempt is made to describe the sequence of distinguishable morphological features which result from a vertical drop.

a. The Hertzian Cone

i. Ring Cracks

Auerback (1891) was the first to note the occurrence of ring crack. Subsequent investigators--Preston (1926) and Frank and Lawn (1967) have noted that fracture is initiated in the immediate vicinity of the edge of the circular contact in a zone of maximum tensile stress. Both Preston (1939:419) and McKenna (1961:61) indicate that fracture propagates at right angles to the plane of maximum tension. The experimental work of Frank and Lawn (1967) demonstrates that the edge of the impact area and the impactor are not coincident and the ring crack swings wide on the curves. The physical causes of this phenomenon are unclear.

A number of ring cracks in various stages of formation were produced experimentally during the course of the study. In Plate 3 several different stages of ring crack formation are illustrated: A. is a quarter ring crack; B. is a 3/4 ring crack; C. illustrates two ring cracks which were started on opposite sides of the impactor when a single blow was delivered to the specimen; and D. exemplifies a double rink crack. For coding purposes these fractures are designated as

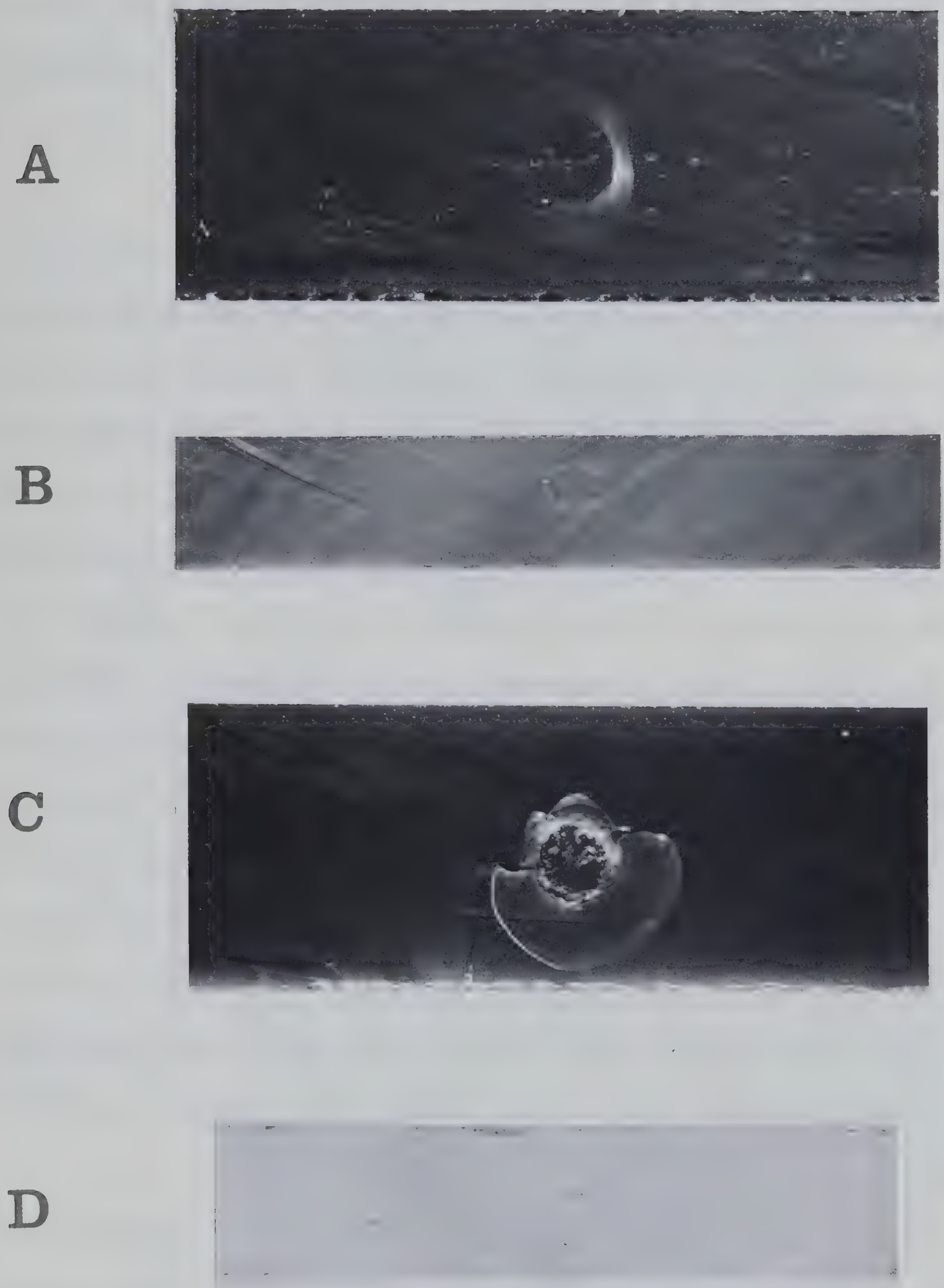


Plate 3 Ring Crack Types:

A. Quarter Ring Crack;
B. 3/4 Ring Crack;
C. Independent Ring Cracks initiated from opposite sides of Impactor
D. Primary and Secondary Ring Cracks

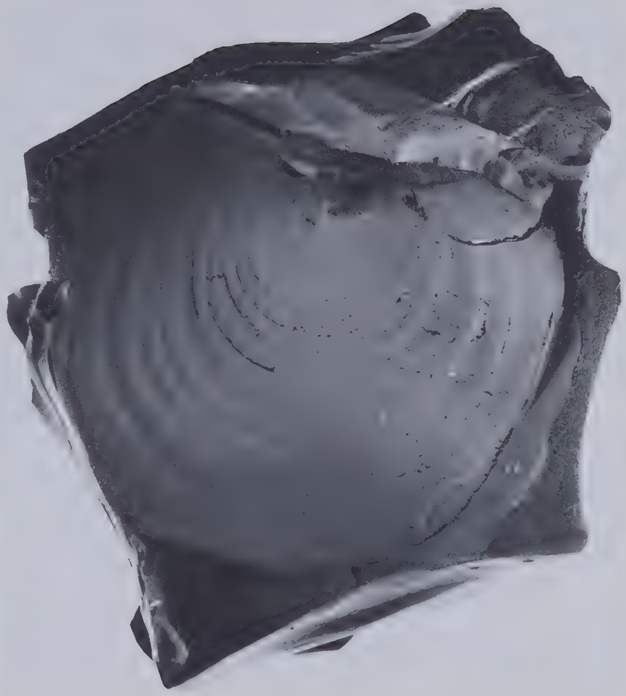
primary and secondary ring cracks in view of the order in which they were created. After the ring crack penetrates the surface it expands radially to form a cone.

ii. The Cone

Hertz, in 1882, was the first to study the stress distribution of the contact area between two spheres. Imagine the stress distribution pattern of glass as illustrated in Figures 6A and 6B. The radial stresses redistribute themselves as the circular fracture penetrates into the material as a diverging cone. Several investigators, e.g., Tsai and Kolsky (1967A), Faulkner (1972A), indicate that cones only penetrate into the body of the material for short distances, generally not more than three inches when they are dynamically loaded. A plausible explanation for this phenomena is that elastic waves interfere with the propagation of conical fractures. An advancing circular fracture front would generate incident waves from opposite sides of the circle. These waves would be in opposition to each other, which would tend to alter the course of the advancing fracture front. Note the ribs on the positive cone in Plates 4A and 4B and the negative cone in Plate 5A, wherein the advancing fracture front was constantly adjusting itself to a changing stress field.

The experimental work of Tsai and Kolsky (1967A) indicates cone penetration is related to impact velocity. In other words, the largest cones were produced at relatively high impact velocities. As the impact velocity is increased, the radius of contact is increased as compared to when the primary ring crack was first formed. A second ring crack forms which is the beginning of a second, larger Hertzian cone.

A



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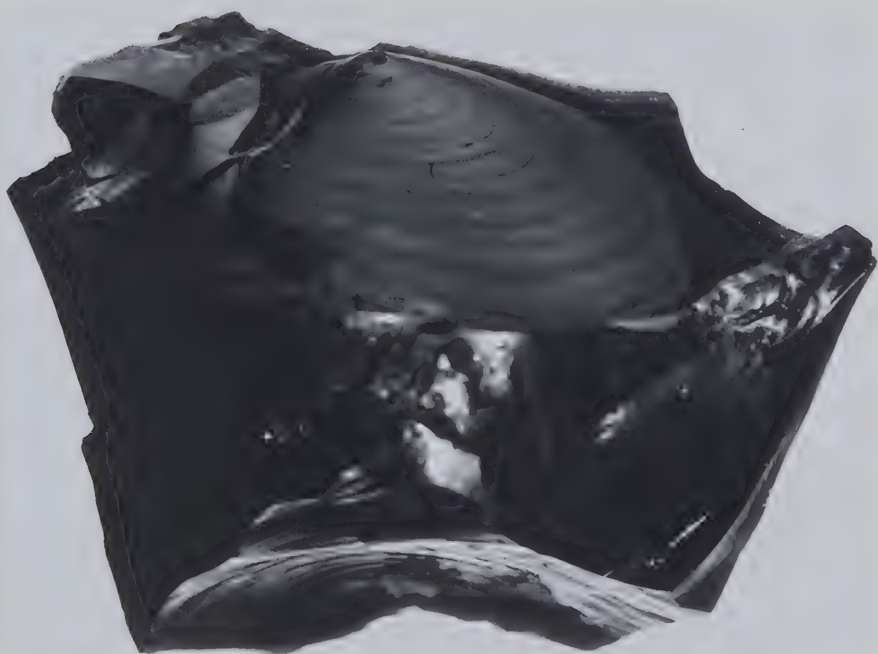
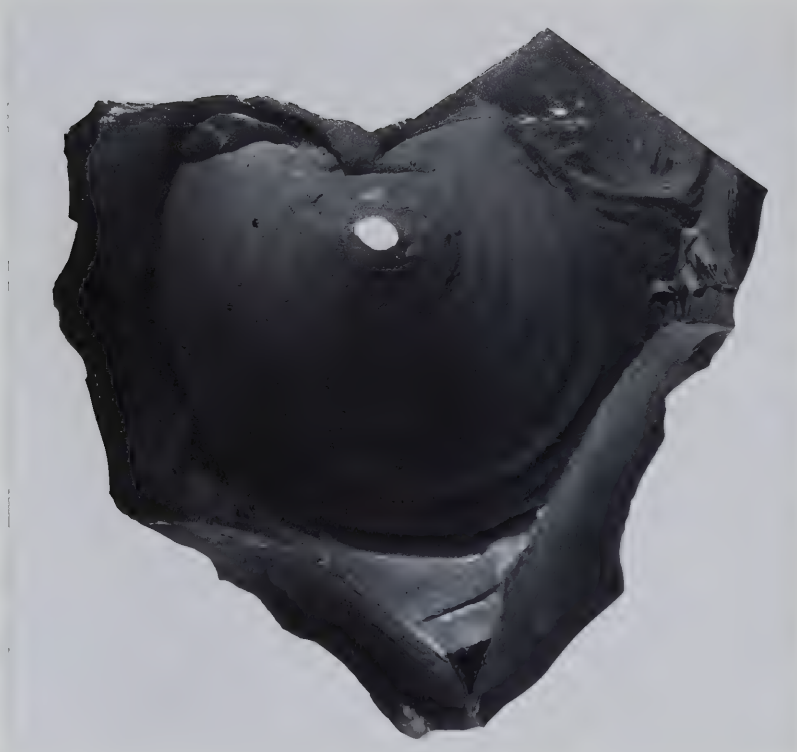


Plate 4 Obsidian Hertzian Cone:
A. Plan View;
B. Profile View

A



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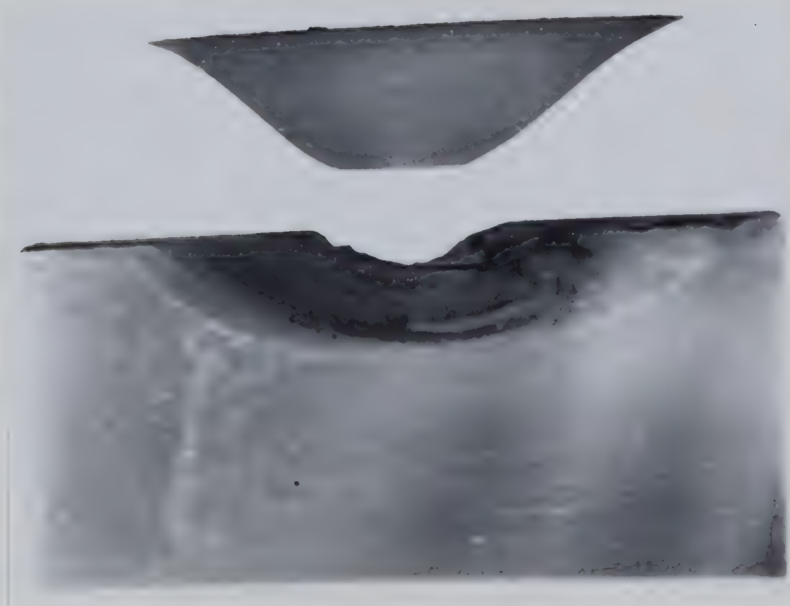


Plate 5   A. Negative Cone Shell for specimen illustrated in Plates 4A and 4B;
          B. Quartzite Half Cone

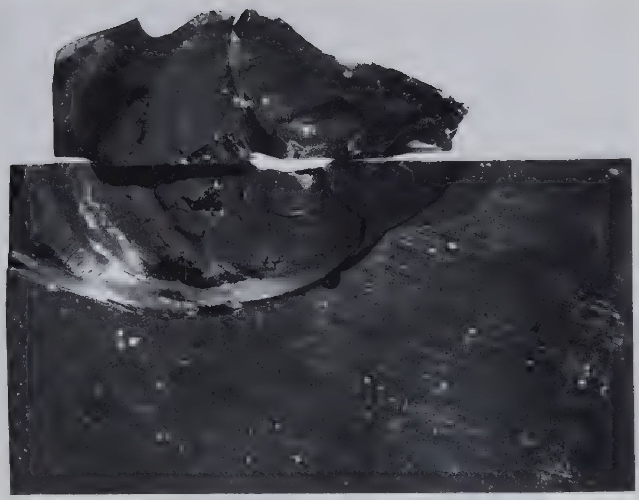
I have observed Hertzian half cones are formed by striking a vertical blow near the edge of a rectangular specimen such as is illustrated in Plate 5B. If the cone is not removed from the parent block of material, such as is illustrated in Plate 6A, an incipient cone and negative cone segments may be created.

iii. Ribs

Gash (1971:351-351) indicates rib markings (previously mentioned in connection with Hertzian cones) are semi-circular or arcuate ridges which are concave to the origin of the main fracture. Hence, this feature indicates the direction of fracture propagation. Rib markings can be subdivided according to geometrical structures into two types. Generally, near the point of impact arcuate or completely semi-circular continuous ridges occur which are concentric to the origin of fracture (Figure 9A). Farther away from the fracture origin arcs occur that are concave but not concentric to the origin of fracture (Figure 9B).
Ribs of this type normally mark a change in the plane of the main fracture. The works of Gash (1971), Kolsky (1963, 1968), Rinehart (1960, 1964) provide a framework for explaining transverse waves which are undoubtably a critical element in the formation of ribs. When the transverse waves which start with the fracture front are reflected back from free or unbounded surfaces they may interfere with the fracture front slightly, perhaps alternating the direction of the front thereby creating ribs (refer to Figure 6B).

Murgatroyd (1942:157) presents an alternative but less plausible hypothesis for explaining ribs as he did not consider the problem of reflected elastic waves. Moving fracture fronts reach rest points,

A



B

Plate 6 A. Incipient Half Cone and Negative Cone Segments;
B. Hackle on Dorsal Face of Flake along Lateral Boundary of Flake Scar

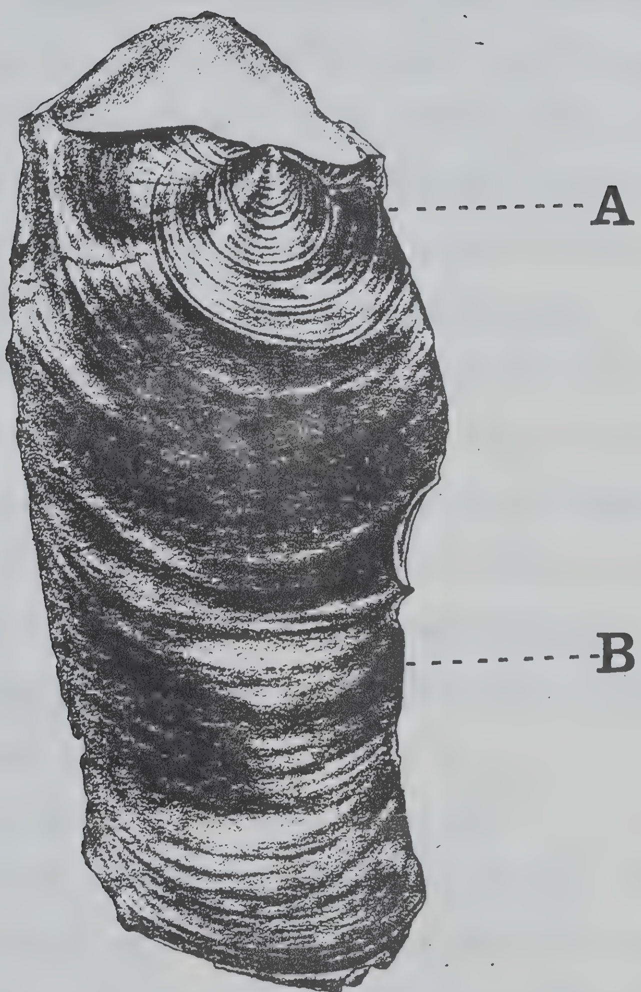


Figure 9 Ribs:
A. Concentric Ribs;
B. Concave Ribs
(illustration after Crabreee 1972A:45)

resulting in rib marks as strain is released ahead of the advancing fracture and stoppage occurs until force builds up again. He suggests fracture arrest is due to molecular rearrangement under the Van der Waal's force. This occurs when a pair of molecules at the extended tip of the fracture are gradually pulled apart by force (refer to Figure 6B). After they move a certain distance apart they no longer attract each other and two fracture faces will be formed. The new surface molecules will proceed toward the mass of molecules behind until they are in equilibrium. Before they come to rest their oscillation will send a series of stress pulses through the adjacent material. Assuming that fracture arrests which create rib marks are due to molecular rearrangement under the Van der Waal's force, it would be possible to apply a large enough stress so that molecular force did not oppose the fracture enough to arrest it sufficiently. Thus slow fractures would show rib marks but fractures with great velocities would not. On the other hand, a smooth fracture may be indicative of an applied force which did not change direction.

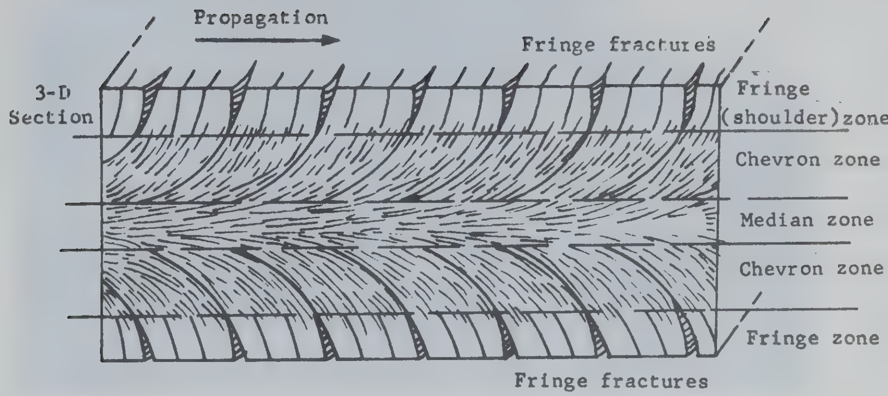
iv. Hackle Marks

Gash synthesized much of the information which has been published pertaining to hackle marks which has developed from independent viewpoints in the fields of geology, metallurgy, mechanical engineering and glass technology. Hackle marks ". . . are curved striations consisting of grooves and ridges which are generally discontinuous" (1971:352). They frequently occur on metal, rocks and glass. Of interest is the fact that the direction of fracture propagation is normally indicated by hackle marks spreading or fanning outwards from the

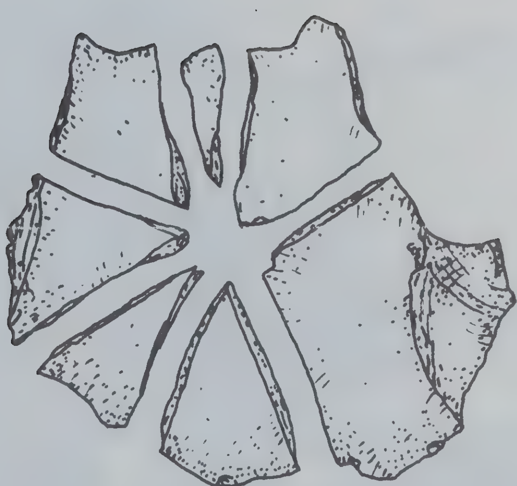
point of impact. The two distinctive kinds of hackle marks are characterized by their geometrical structure: (1) in plume structures the hackle striations fan outward from a common origin; (2) in chevron structures (or herringbone structures) the hackle striations are of constant geometry and angle with one another and lack a common origin.

Hackle marks which occur on archaeological specimens most closely resemble the chevron type hackle (Figure 10A). However, hackles on stone implements only conform to the model in Figure 10A in that they exhibit hackles in the fringe area. The center ridge of the flake illustrated in Plate 6B is the former lateral boundary of a previous flake which is characterized by hackle marks. In addition, hackle marks on archaeological specimens, like glass (see Murgatroyd 1942:165), can be seen running through rib marks and at right angles to them. They also commonly occur adjacent to the bulb of force, as illustrated in Plates 7A and 7B. Hackles are independent fractures which occur inside the glass and influence the course of the main fracture that is initiated from the surface. Murgatroyd suggests the main fracture moves forward through a series of hackle surfaces which influence its inclination.

Shand (1954:58), in summarizing the work of Gurney _et al._, indicates the rate of fracture propagation is a function of the stresses surrounding the crack tip and its velocity. The velocity of the spreading crack will increase rapidly with stress. As the crack reaches its limiting velocity, the fracture is accompanied by an energy-consuming phenomenon--hackle formation. In glass, when fracture is initiated the fracture advances in a flat, smooth plane known as a "mirror surface"



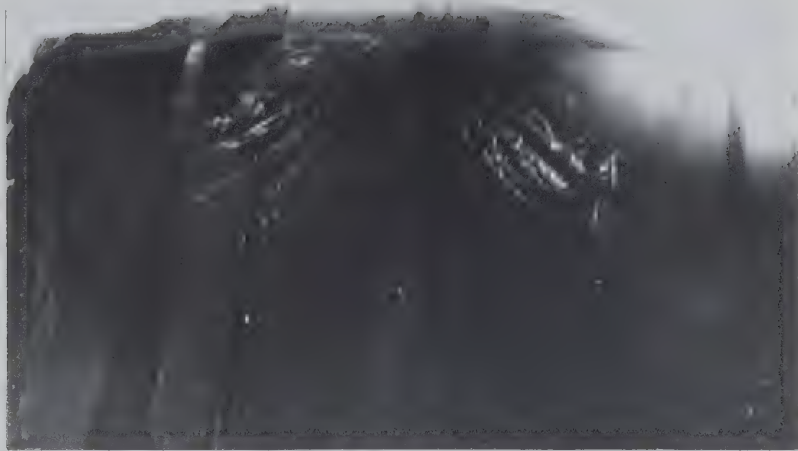
A



B

Figure 10 A. Descriptive Terms of Chevron structure (after P. J. Syme Gash 1971:356);
B. Flake Geometrics

A



B

Plate 7 A. Hackle marks adjacent to bulb;
B. Hackle marks below fractured bulbar area.

until the limiting velocity of the fracture is reached. At this transition point an increasing roughness is found which has the appearance of stippling (Plates 7A and 7B). Gash (1971) suggests the mechanism responsible for hackle formation is incident and reflected stress waves.

v. Radial Fracture of Hertzian Cone

A number of investigators have noted that high velocity impacts may result in a tension zone inside the compressed cone area which ultimately fails, creating radial cracks (Kirkhof and Mullerbeck 1969; Tsai and Kolsky 1967B; Frechette and Cline 1969; and Stong 1970). The mechanism which is probably responsible for the tension zone inside the cone is the interaction of incident and reflected P and S waves in the cone area. However, it should be noted that Bowden and Field (1964:351-352) suggest that to explain radial fracturing the interaction of reflected stress waves with Raleigh surface waves, produced by high velocity impacts, must also be taken into consideration. Shand (1954:57), in reviewing the work of Schardin, Elle and Struth, furthermore indicates that radially extending cracks are actuated by transverse elastic waves.

Frechette and Cline (1969), who conducted ballistics tests on ceramic panels and Stone (1970), who fractured light bulbs in a high school science project, noted a similar kind of regularity in fracture. When specimens are subjected to high velocity impacts, distinctly different fracture patterns occur in a definite sequential order. The conical Hertzian type of fracture precedes the radial fracture, but once the radial crack is initiated it may pass or outrun the conical fracture.

The combination of both radial and conical fracturing is

illustrated in Plate 8. The pieces of the fractured cones segmented by radial fracture are here termed cone segments (Plate 8B). Sometimes the negative cone area is shattered by radial fracturing. These segments are called negative cone segments (Plate 8A). In the actual tool making process it is not uncommon to create negative cone segments without fracturing the cone.

Aboriginal tool makers clearly understood how to initiate both conical and radial fractures. Bipolar fracture is an example of the use of high velocity impacts to generate only radial fractures. The use of a polar anvil results in internal concentration of stress. In Chapter II mention was made of the fact that Crabtree (1972A) has noted bipolar failure results in the production of at least two distinct kinds of morphological features. As an example of this problem let us consider two elongated pebbles, one with an ovoid cross-section and one with a circular cross-section (Plates 9A and 9B). When bipolar failure is induced as in Plates 9A and 9B, a failure occurs across the longest of the two cross-sectional axes. The underlying mechanism responsible for this kind of failure are elastic waves reflected back from the lateral edges sooner than the longitudinal edges. When these reflected waves converge from the lateral edges they create a tension zone where failure occurs. A similar model can be used to explain the "orange section effect" (cf. Crabtree 1972) depicted in Plates 9C and 9D; only in this case since the cross-section is circular, the reflected waves will arrive back at approximately the same time, concentrating in several tensile zones.

b. Flakes

Several investigators have considered the relationship be-

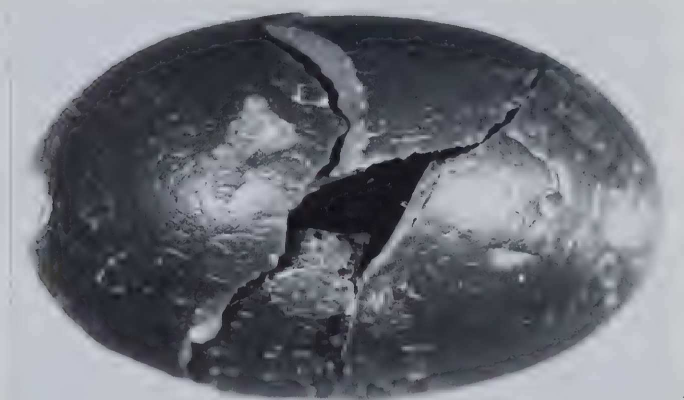
A

B

Plate 8 Radial and Conical Fracturing
A. Negative Cone Segments;
B. Cone Segments Produced by Radial Fracturing.

A B

C



D

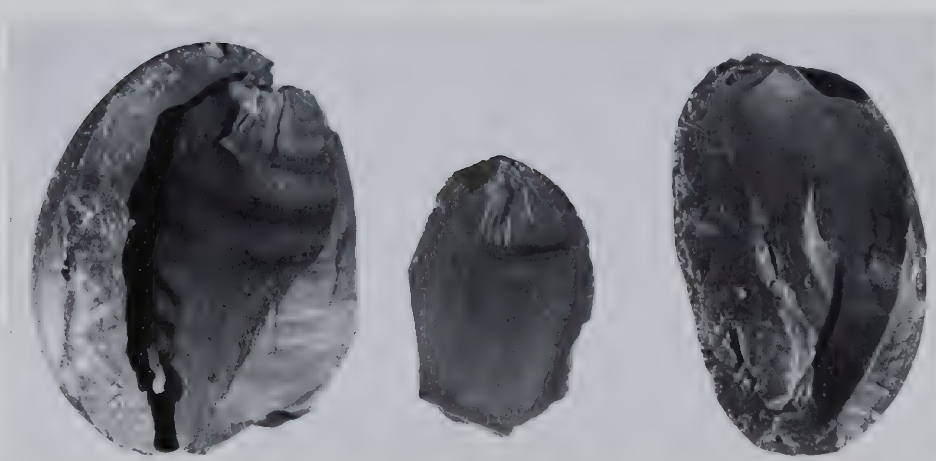


Plate 9 A. Profile View Bipolar Splitting;
B. Plan View Bipolar Splitting;
C. Profile View of Bipolar Splitting Resulting in Orange-Shaped Sections;
D. Plan View of Bipolar Splitting Resulting in Orange-Shaped Sections

tween flakes and the Hertzian cone fracture; Kerkhof and Muller-Beck (1969), Speth (1972) and Faulkner (1972). Faulkner's photoelastic experiments showing stress distribution involved in blade production are quite instructive. In a series of comparative experiments, a copper pressure flaker was used to produce isochromatic patterns which reflect stress disbribution in an epoxy specimen at increasing distances from the edge. These experiments clearly illustrate that there are qualitative differences in stress patterns which are a function of the distance from the edge in which force is applied. Thus the Hertzian cone and flake formation are related but cannot be analyzed by the mathematics of the Hertzian fracture as was attempted by Speth (Faulkner 1972: 114-115).

Crabtree (1968:478) concluded that the angle at which pressure is applied to a cone is a critical factor in determining the path a blade will take. Crabtree produces blades by using a downward and outward pressure. Faulkner (1972A:109-112) experimentally tested this proposition. He reasoned motor behavior should be accompanied by a redistribution of stress in the core. Specimens were placed in a strain frame and loaded at several different angles. Nearly identical stress patterns were produced in all cases. The precise location of the pressure tool relative to the corner of the specimen had a much greater effect on the stress pattern than did the angle of the incident applied force. Unfortunately, this static test is not applicable as there is no indication of how stress is redistributed when the fracture is initiated. Hence, speaking as a tool maker, it is my opinion that the angle of force application is undoubtedly important.

i. Platforms

The platform is the area to which the force load is delivered. When the impactor strikes the specimen it may sometimes skid, creating scratches and microcracks before failure is initiated. Generally only stone impactors would be expected to produce micro-scratches (cf. Semenov 1971).

ii. Lips

Flakes and blades, like Hertzian cones, are initiated at the surface of the impacted material adjacent to the loading area by tensile failure. In some cases a partial ring crack is formed which occurs as a lip (Plate 10A) on the ventral surface of the flake, and is perpendicular to the platform (cf. Speth 1972:38).

iii. The Zonal Relationships on the Ventral Surface of Flakes, e.g., Bulbs and Distal Ends

The mechanical processes responsible for flake and cone morphology can be explained in view of the principles previously discussed. The positive fracture surfaces on flakes or the negative surfaces which occur on cores can be viewed as a set of zonal stress relationships (refer to Plate 11). When producing flakes or blades by percussion or with a punch it is necessary to apply stress at an oblique angle to the surface from which the flake or blade is to be removed. In zone 1, prior to failure an asymmetrical Hertzian cone will be formed (Faulkner 1972). Once failure is initiated the radial stress is applied only to the proximal end of the flake, a situation which results in a redistribution of the stress field. It seems likely that the oblique angle at which stress is applied will be significant in terms of the angle at which the elastic waves are reflected from the dorsal surface of the flake, an angle which

A

B

C

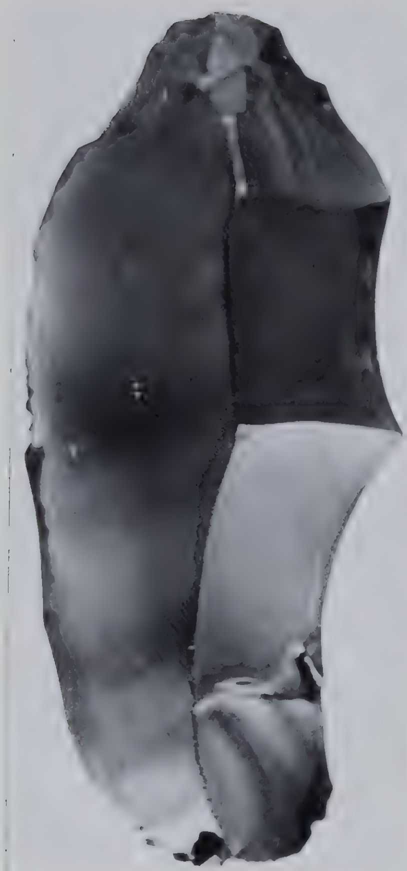
Plate 10 A. Quartzite Core and Flake Illustrating Lip Adjacent to Loading Area on Platform;
B. D-shaped Eraillure Flake and
C. Eraillure Flake Scar.

Plate 11   Zonal Relationships of Blade and Core

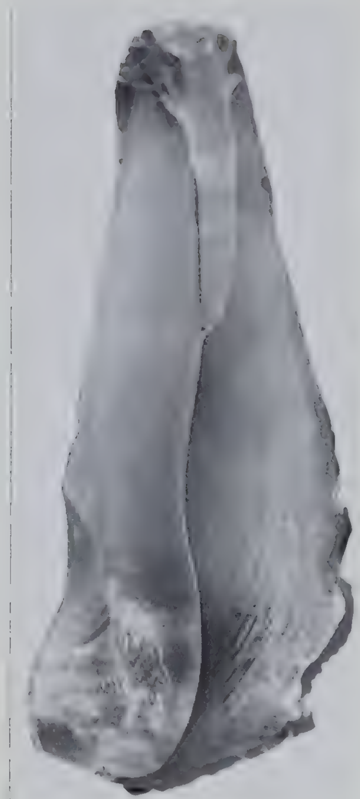
will be significant in terms of the angle at which the elastic waves are reflected from the dorsal surface of the flake, an angle which is in effect the direction of the advancing fracture front to form the bulb of force--zone 2. If the impactor carries through it may result in micro-flaking and platform crushing, as illustrated in Plate 12C.

As the stress field is redistributed the fracture front straightens out and forms a relatively flat surface called zone 3. This surface is normally parallel to the exterior surface--even if the exterior surface is curved. Hackle and rib marks previously described commonly occur on this surface along one or both lateral edges. Their distribution is undoubtedly related to the morphology of the dorsal face of the flake which controls wave reflection angles.

The advancing fracture front maintains a right angle to the principle field of tension. As the fracture front moves into zone 4, which is near the bottom surface, stress waves reflected from the bottom of the material may interfere with the course of the advancing fracture and cause it to change direction. Exactly which course the crack takes is to a large extent determined by the fracture velocity. Slow fractures may turn toward the front or dorsal face, forming hinge fractures (Figure 11C), or they may turn toward the ventral side of the parent material, creating what is sometimes called a reverse hinge fracture (Figure 11D). Wyckoff (1969) and Tixier (1963) have named biface thinning flakes which exhibit this characteristic as outrépassé, meaning over and beyond the far edge (Plates 16A and 16B). On the other hand, the fracture may turn sharply in either direction. If the flake or blade is relatively thin at the distal end when this process occurs, it is said to feather out (Figure 11A). When the distal ends of flakes



A



B

C

Plate 12 A. Diverging Ridges on Dorsal Face Which Affect the Outline Form of Flakes;
B. Flake Outline Affected by Curved Center Ridge;
C. Platform Crushing and Micro-flaking

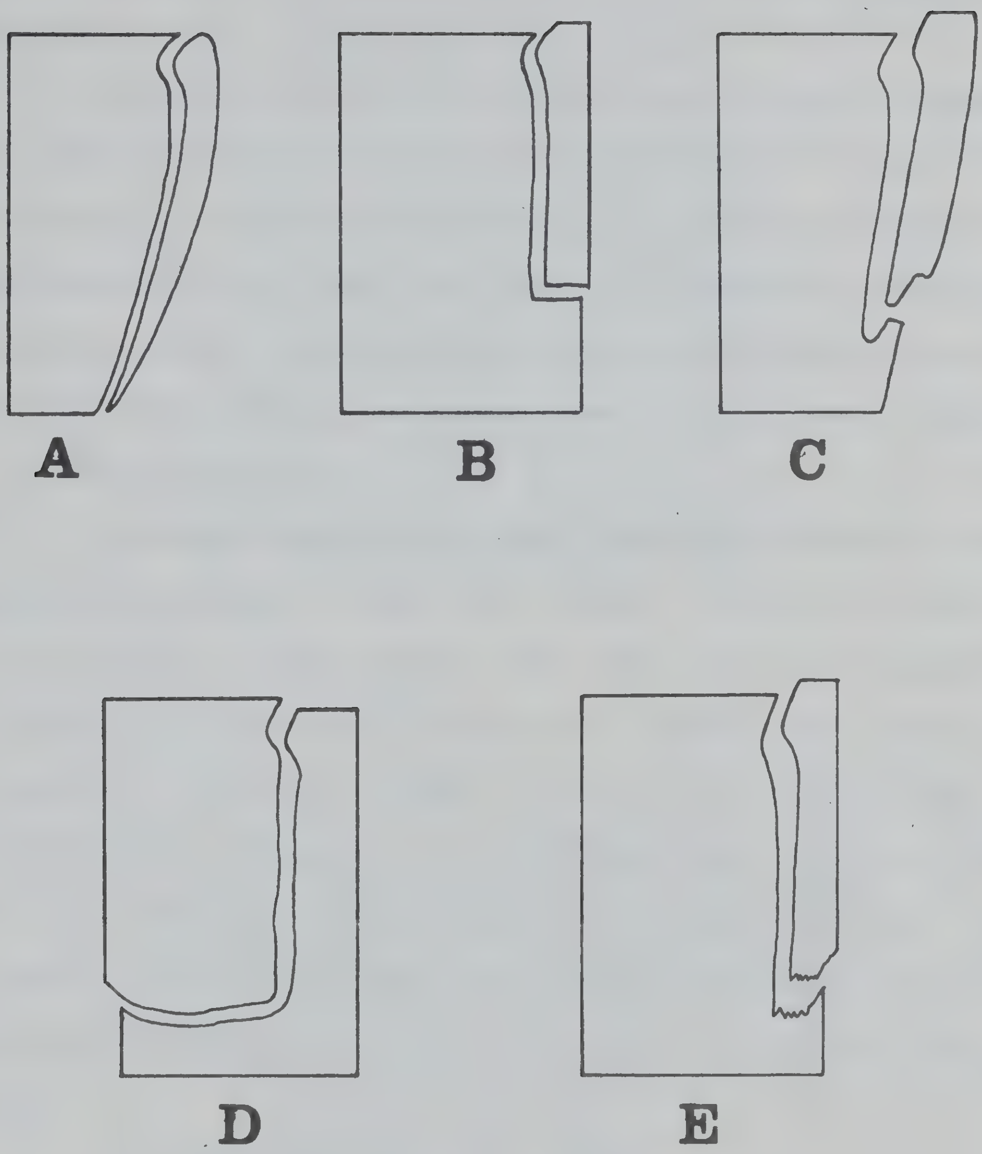


Figure 11 Flake and Core Distal End Morphologies:
A. Feather;
B. Step;
C. Hinge;
D. Reverse Hinge;
E. Jagged

are jagged and irregular (Figure 11E), it is a good indication they were in contact with another substance when the flake was detached. Flakes broken transversely across the distal end are called step flakes (Figure 11B).

Actually, there are a continuous number of angles between hinges and reverse hinges at which flakes terminate. It is not difficult to imagine, in view of this phenomenon, how flakes can acquire curvature when their distal ends continually curve towards the ventral side of the fracture face. Each succeeding flake will then begin to curve a little bit sooner than the preceding flake in this extractive process.

iv. Eraillures

Faulkner (1972B), in an unpublished paper presented to the 30th Plains Conference in archaeology, attempts to explain the occurrence of D-shaped eraillures (Plate 10B). They are normally associated with bulbs of force which are characterized by hackle marks that fan back toward the direction of impact. Eraillures are initiated from these hackle marks. The cone side of eraillure flakes are mirror-smooth, however, the flake side is characterized by rib marks which abut into the segment of hackle mark from which initiation occurred. The exact mechanism which causes failure to be initiated from the hackle mark is not clear.

v. Factors Affecting Flake Shape

The outline shape flakes acquire during fracture is to a large extent, but not totally, controlled by the morphology of the face which parallels the fracture. If, for example, fracture is induced from behind a ridge, as is the case in blade production, the ridge guides

the advancing fracture. As the stress waves are reflected from the two intersecting free boundaries of the ridge, a tension field is created directly behind the ridge which facilitated fracture. If the intersecting surfaces converge, as is the case on some flakes (Plate 12A), the outline of the flake will also reflect this phenomenon, or conversely, if the ridge curves as in Plate 12B, so will the outline of the flake. It is through the use of ridges that tool makers control the shape of flakes and blades. Now it might be assumed that a perfectly flat surface would result in the formation of a symmetrical, circular flake. However, this is not always the case. Since Giffith cracks are somewhat randomly distributed, failure may begin closer to the dorsal face on one edge of the striking platform than the other, resulting in asymmetrically shaped flakes.

2. Conoid Fracture Reversals

Conoid fracture reversal is a special type of fracture mechanism associated with Hertzian cones and half cones. When high velocity conoid fractures arrive at the bottom free surface opposite the point of impact at approximately a 45° angle, they behave in much the same way as do waves when they are reflected. The fracture front reverses its direction into one or a series of radial branches which may result in the segmentation of the cone as well as the rest of the specimen. The fact that conoid reverse fractures are initiated from the distal surface is indicated by rib and hackle marks which point back to the point of fracture origin (Plates 13A and 13B). In Plate 13 a half cone conoid reverse fracture is illustrated. In Plate 13B the cross section of the left hand fracture of 13A is illustrated.

A

B

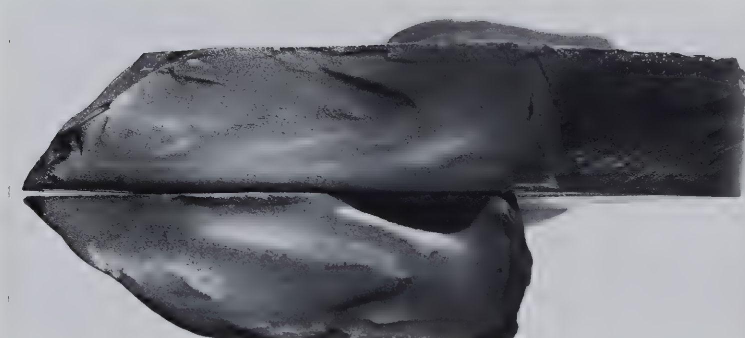


Plate 13 A Half Cone and Conoid Reverse Radial Fracture:
A. Plan View of Fracture;
B. Cross-Section of Left Hand Fracture in A.

Previously, Bonnichsen (1968) reported biface thinning flakes which were purposefully broken into triangular segments in aboriginal times for the purpose of producing flake geometrics. Geometric specimens can be consistently produced by initiating conoid fracture reversals. In view of the fact that cones are rarely penetrated into the mass of the material more than 2--3 inches, conoid reverse radial fracture can only be easily induced on relatively thin specimens such as biface thinning flakes.

3. Fracture by Flexure or Bending

Preston notes that the distinction between bending and torque is nebulous and is essentially a question of how one looks at it. He states,

> "In general we call a thing a torque if its tendency is to rotate something resembling a shaft or a tube around its longitudinal axis. If the tendency is to flex the thing, bending an otherwise straight object such as a shaft or beam out of line, we call it a bending moment."
>
> (Preston 1933:165)

When specimens are supported between two points such as in a vise or between two points in the hand and pressure or percussion is applied to unsupported material between the two points, compressive stresses are created on the side on which force is applied. However, on the opposite side tensile stresses are created. When they reach a critical value tensile failure will occur on the bottom side of the material.

In Plate 14 a radial fracture pattern is illustrated with cone segments. Although the specimen was impacted at the center of the

top surface in illustration B, fracture was initiated through flexure from the bottom surface 14A. In isotropic materials such as glass and obsidian hackle and compression marks point toward the origin of the failure center. As can be seen in the cross sections of the fracture pattern in 14C, failure was initiated from the bottom of the specimen. The letter "T" in Plate 14 indicates the adjacent edges of the cross-section were formerly the top of the specimen. However, hackle marks which intersect the cone which was expanding from the bottom suggest fracture may have also been initiated from the top surface at a slightly later moment in time.

Specimens which are not isotropic may also fail by flexure. In quartzite specimens, such as the cross-sectional view in Plate 18A, hackle and rib orientation features are absent, apparently due to the granular nature of the material. In Plate 15, photos A and B illustrate a specimen which failed by flexure. However, in contrast to the specimen illustrated in Plate 14A, failure was initiated from the bottom lateral edges of the compressed cone. The top photo, Plate 15A, is the top side of the specimen which was impacted. Photo 15B is an exploded view of the bottom side of the same specimen, illustrating a combination of conical and radial fracture features.

Faulkner suggests another way by which bending takes place on long, slender specimens such as bifaces struck near one end. He states,

> "In this case, the most intensive compressive shock is concentrated along the longitudinal axis of the specimen. The wave is reflected at the end of the specimen, returning, in general, at some angle oblique to the incident wave fronts. At some point in the specimen, the incident and

A

B

C

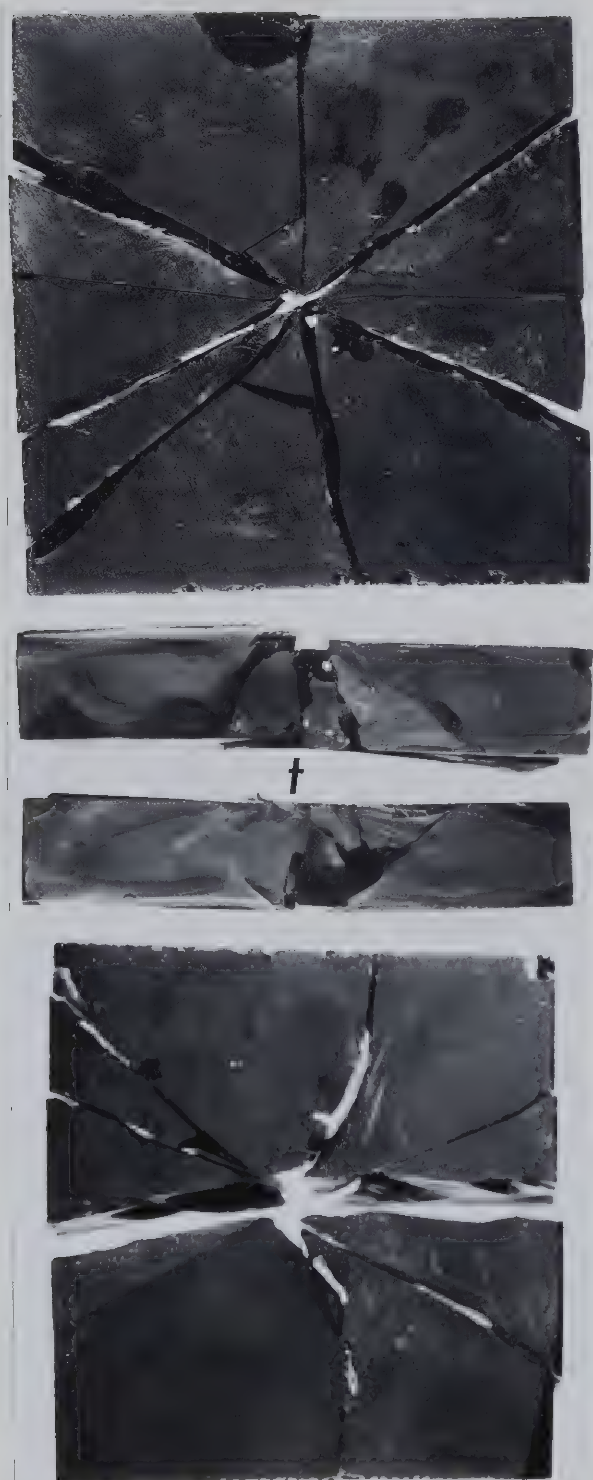


Plate 14 Fracture by Flexure:
A. Specimen Impacted Center of Force;
B. Failure Initiated from Center of Bottom Surface;
C. Cross-Section Illustrating Orientation Features.
The letter t indicates the bottom surface from which fracture was initiated.

A

B

Plate 15 A. Top View of Specimen Broken by Flexure;
B. Exploded View of 15A, Bottom View Illustrating a Combination of Conical and Radial Fracture Features.

> reflected wave fronts may reinforce each other, and a tensile fracture may result. This tension is often concentrated at one surface of the specimen, causing fracture by bending. In (any) case, fracture occurs at right angles to the intended fracture plane, and is initiated at a substantial distance from the point of impact."
>
> (Faulkner 1972:140)

4. Fracture at Internal Flaws

Failures are sometimes initiated from internal flaws when a material is subject to a load. Internal flaws such as bedding planes may considerably reduce the strength of a material. There are a number of mechanisms which can result in the development of internal flaws. One of the most common in archaeological specimens is thermal fluctuation. Tension zones due to contraction on cooling may result in failure in homogeneous materials.

5. Spalling

Rinehart (1960, 1964) and Kolsky (1968) report on a type of failure known as spalling or scabbing, which is also sometimes called Hopkinson fracture after B. Hopkinson, who discovered the effect in 1914. Rinehart indicates, "Spalling is defined as fracturing of a material caused by a high-intensity transient stress wave reflected from a free surface . . . " (Rinehart 1964:89). Transient stresses occur when a material is stressed with a suddenly applied load. The deformation and stresses are not immediately transmitted to all parts of the body, for some of the remote portions of the body may remain unstressed for some time. The particle motion of transverse elastic waves which is normal to the direction of propagation seldom

plays any part in spalling, but P waves are of major consequence.

Spalling is produced by the interference near a free surface between a portion of an oncoming incident compression wave which has not been reflected and a portion reflected which is transformed into a tensile wave. When a longitudinal wave strikes a free surface at right angles, the continuity of stress and particle motion will only be preserved if the wave is reflected as a tensile longitudinal wave of equal strength. The portion of the wave which has not reached the surface and the portion reflected interfere with each other, giving rise to a distribution of stress which is conducive to the generation of fracture. The tensile stress increases as the reflected wave moves back into the body of the material from the free surface. A model of a circular pulse front reflecting from a free surface is depicted in Figure 12. Whether fractures occur at all depends on the resistance of the material to fracture, the magnitude of stress and the shape of the stress wave.

When high-velocity impacts are delivered to a core, spalling sometimes occurs. Usually what happens is that the bottom of the core or a portion of the bottom of the flake is knocked off. In Plates 16A and 16B a biface thinning flake is illustrated in plan and profile section. As can be seen in the adjacent photos, tensile failure induced by spalling brought about the detachment of the edge of a biface opposite the point of impact. Thus spalling is likely to be responsible for what Tixier (1963) has previously termed outré passé. It should be noted that the spall section of the specimen illustrated in Plates 16A and 16B separated from the upper portion of the flake

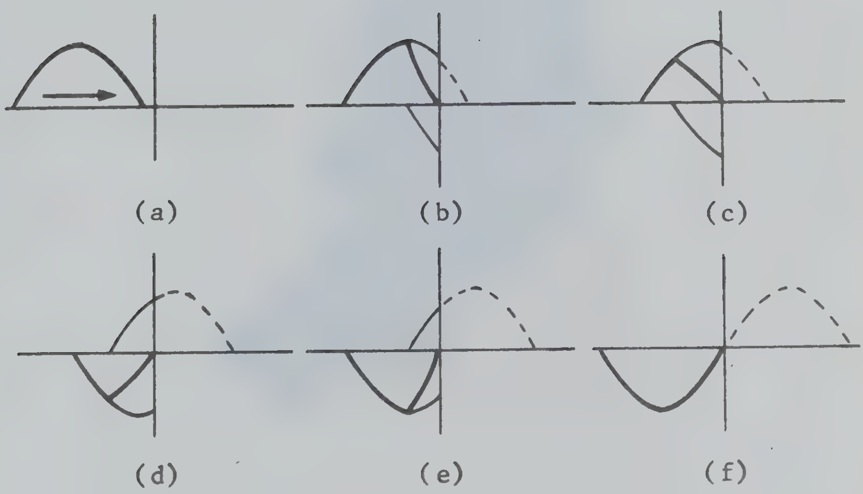


Figure 12 Reflection of Pulse at a Free Boundary (after Kolsky 1968: 284)

A

B

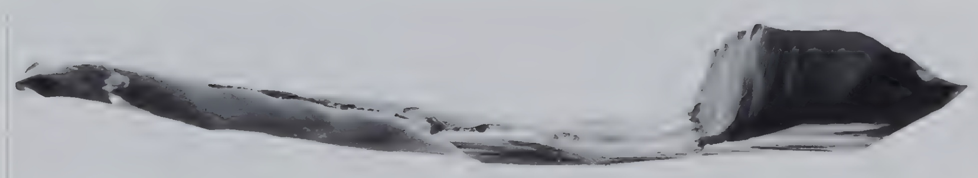


Plate 16   Spalling or the Distal End of a Thinning Flake:
A. Plan View;
B. Profile.

upon detachment. Separation such as this does not always occur in outré passé flakes; however, this phenomenon can probably be explained in terms of the magnitude of the returning reflecting waves.

6. Vice-Induced Failures

Three kinds of fracture morphologies were produced as a by-product of holding positions used by the Stainless Steel Indian. Corner flakes were sometimes detached where specimens were in contact with the vise in holding positions 5 and 6 (see Plate 17A). Failures were also sometimes induced where specimens were in contact with the bottom of the vise, such as in holding positions 1, 2 and 4. Fractures of this variety are here termed bottom support failures (Plate 18B). Also, in two instances flakes were removed from the lateral edges of specimens as pressure was applied by the vise.

E. Summary

The objective in this chapter has been to present a theoretical orientation which can be used to explain fracture features in general, and specifically the morphological features produced during the course of this study. The theoretical framework advanced attempts to explain rock failure in light of material properties, the Griffith Crack Theory and wave mechanics. I have suggested that fracture may be initiated in five different ways: directly under impact, by conoid fracture reversals, fracture by flexure or bending, fracture at internal flaws and by spalling. Fracture features initiated directly under impact are of the greatest concern as this form of fracture initiation was commonly used by aboriginal populations. In the foregoing study the

Plate 17 Corner Support Failure Induced by Vise

A

B

Plate 18 A. Cross-Section of Quartzite Specimen Broken by Flexure Which Lacks Hackle and Rib Orientation Features
B. Bottom Support Failure Induced from Vise

following features: ring cracks, Hertzian cones, radial fractures, negative cones, cone segments, bulbs of force, ribs, hackle marks, lips, hinges, and the distal end morphology of flakes were explained in light of the above theoretical orientation.

Now that both a cognitive and fracture body of theory has been developed, attention may be turned to the interpretation of the experimental results.

CHAPTER VI

ANALYSIS OF EXPERIMENTAL DATA

A. Introduction

In Chapter III it was postulated that the cognitive process in the second level of the proposed model is synthetic in nature. Lithic artisans have choices open to them as to how to regulate and articulate the input variables of force, impactor, holding position, material and shape. A dynamic interaction occurs between materials and the other input variables in the flaking process while stone implements are being created. The question examined in the present Chapter is: can output attributes be classified in regard to the decisions which were responsible for their formation?

Two possible ways in which attributes can be dealt with in attempting to determine the input decisions responsible for their formation are here considered. The assumption can be used, for classification purposes, that each distinct combination of input variables will result in a unique combination of output variables. In the second section of the paper the experimental data base is used to test this assumption. The output variables from all of the experiments were compared in an attempt to determine if experiments which have distinctly different input parameters have an overlap in output variables.

An alternative approach for determining the input decisions responsible for the creation of output variables, is systematically to examine the conditions responsible for each output variable. Some of the implications of this approach are explored in the third section of the paper as an attempt is made to determine which specific experimental input conditions were responsible for the formation of particular output variables used in the experimental design.

B. Decision Sets and Combinations of Output Variables

The attempt to determine if each experiment (decision set) or combination of input variables results in the creation of a unique combination of output variables or attributes has necessitated the development of a special methodology. This objective has been met by placing the experimental data in a matrix in which experiments are listed across the horizontal axis and the output variables noted on the vertical axis. As each experiment was replicated five times, the results have been summarized by placing the mean, mode and range of each experiment in the matrix (see Table 1). These statistics were selected for inclusion in the matrix as they clearly reflect the nature of variance which occurs within the framework of each specific experiment.

The first analytic task undertaken is to determine if the experiments have overlapping output variables. This objective has been met by simply noting the presences or absences of output variables. The construction of Table 1B readily permitted the application of an inspectional comparative approach in which the output variables of every experiment were compared with every other experiment. A major

question which immediately arose during the course of this analysis was, "What criteria should be used for determining when overlap occurred in the output configurations of two dissimilar experiments?" The rather arbitrary rule was set that output results could be considered as overlapping if they shared in common all but two output variables. The results of these comparisons were then listed on a piece of note-paper. Upon inspection of these results, it was quite apparent that overlapping output variables fell into four very definite patterns which form the basis of the following discussion (see adjacent Summary Chart).

1. Pattern 1

Specimens which have been admitted to Pattern 1 share in common the fact that no output variables were created. In other words, the rock specimens which were impacted did not break. The reason why failure did not occur must be sought in particular combinations of input variables, and it would be dangerous to generate a single answer cross cutting this group of experiments. However, one point is obvious. The specimens did not fail because they received an insufficient amount of energy. Thus the combination of input variables is a critical factor in determining how much energy is actually delivered to the material.

2. Pattern II

The output variables which consistently cluster together in Pattern II include: frequency distribution of completed radial cracks on edge number 1 (067), on edge number 2 (068), on edge number 3 (069), on edge number four (070) and fracture by flexing or bending (072). Upon

inspection of the experiments 43, 44, 67, 69, 120, and 140, it is evident that these experiments share one thing in common. Specimens held in position 5 over the open vise mouth broke by radial fracturing, with the exception of 120, which broke in holding position 6. Force level, impactor and material can be varied considerably as long as the material is held in the appropriate position. The conclusion which can be drawn from this pattern is that there are a number of input conditions which can lead to radial fracturing, and until a much more sophisticated scaling procedure is devised, specimens broken by radial fracture will be exceedingly poor indicators of input variables.

3. Pattern III

Output variables which together in Pattern III include: corner support fracture (007), fracture directly under impact (008), conoid fracture reversal (039), and primary half cone (083). Upon inspection of the input variables it is evident that what this group of experiments--46, 70, 71, 94, 95, 115, 142, and 143--hold in common is the same holding position--number 6. There is one exception, experiment 115, in which the specimen was held in position number 5. Thus it is evident that there are a number of combinations of input variables which create the same output results when specimens are held and struck in holding position number 6. It is clear that the output variables as well as those in Pattern II are mechanically linked. Force level, material and impactor can be varied as long as the holding position and point of impact are held constant.

4. Pattern IV

Output variables which group together in Pattern IV in-

SUMMARY OF OVERLAPPING OUTPUT VARIABLES

Pattern Number	Experiment Number	Input Variables	Output
I	1 - 31		No output
	49 - 54		No output
	56		No output
	62 - 63		No output
	73		No output
	97 - 103		No output
	121		No output
II	43	F1 I3 H5 M2	7 - 67 68 69 70 72
	44	F1 I3 H5 M2	7 67 68 69 70 72
	67	F2 I1 H5 M1	- - 67 68 69 70 72
	69	F2 I1 H5 M3	- 60 - 68 69 70 72
	120	F3 I1 H6 M3	- - 67 68 - 70 72
	140	F3 I3 H5 M2	- - 67 68 69 70 72
III	46	F1 I3 H6 M1	- 8 39 76 - 83
	70	F2 I1 H6 M1	- 8 39 - - 83
	71	F2 I1 H6 M2	7 8 39 - - 83
	94	F2 I3 H6 M1	7 8 39 - - 83
	95	F2 I3 H6 M2	7 8 39 - - 83 84
	115	F3 I1 H5 M1	8 39 -77- 83
	142	F3 I3 H6 M1	7 8 39 82
	143	F3 I3 H6 M2	7 8 39 65- - 83
IV	74	F2 I3 H1 M2 T1	10 - -
	75	F2 I3 H1 M3 T1	10 - -
	76	F2 I3 H1 M1 T2	10 - -
	77	F2 I3 H1 M2 T2	10 - 12
	78	F2 I3 H1 M3 T2	10 - 12
	125	F3 I3 H1 M2 T2	10 - 12
	126	F3 I3 H1 M3 T2	10 - -

clude: primary ring crack circumference (010) and primary ring crack diameter (012). These output features are associated with experiments 66, 74, 75, 76, 77, 78, 125, and 126. It is interesting to note that impactor 3 (quartzite) and holding position 1 occur in all the input variables responsible for the production of ring crack diameter and circumference. As the production of ring cracks is the first morphological event to occur in creating a fracture, it seems apparent that a much higher energy requirement would have been necessary to induce failure when specimens were held in holding position 1, in which torque was applied.

The general theoretical ramifications of the above experimentally produced patterns to the construction of decision model types is evident. The premise that each distinct combination of input variables will result in a unique combination of output variables is not a sound inferential framework for determining input conditions or decisions on the part of tool makers, as distinctly different decisions can result in similar combinations of output variables.

C. Decision Sets and Individual Output Variables

The second research procedure is based on a different fundamental premise. Although a combination of morphological features may be produced as a consequence of a single fracture event, each independent output variable should be investigated as if it is an independent variable. The rationale for this fact is that particular output variables may be sensitive indicators to particular decisions in the decision set which led to failure. Once the experimentalist has determined the in-

put decisions or range of decisions responsible for each output variable, he will then be in a position to look at the output variables on a specimen as a group of related features which reflect different aspects of the decision set which was responsible for the formation of the fracture surface under investigation.

In attempting to answer the question of what input conditions were responsible for the creation of a particular output, variables produced within the framework of the experiments design led to the construction of Table 3. The experiment number and input levels for each independent output variable are listed in the table. In the following discussion the decision or range of decisions responsible for the creation of each output variable are recorded. For organizational purposes, the output variables have been divided into four major groups: 1. mechanisms of failure; 2. cones and associated features; 3. flakes and associated features; and 4. radial fracture.

1. Mechanisms of Failure

a. Fracture Directly Under Impact 008

Fractures which were initiated immediately adjacent to the impact point occurred 253 times and have a relative frequency of 35.1%. All levels of each input variable are associated with this variable.

b. Conoid Fracture Reversal 039

Conoid fracture reversal is a term which has been "coined" to refer to a situation in which a fracture front arrives at a free surface and then reverses itself, thereby creating a new fracture which may have rib and hackle marks which point back to the free surface from

which the fracture was initiated. In examining the input variables responsible for the creation of conoid fracture reversals, it is evident that conoid reverse fracture can be created using all levels of all variables with the exception of holding position. Conoid reverse fractures are associated with holding positions 2--6.

It is interesting to note that conoïd reverse fractures were produced 43 times in the experiments. A record was made as to the number of branches created in each fracture reversal. Ten specimens only had one branch, thirteen had two branches, ten have three, six have four, one five branches, one six branches and one seven branches.

c. Fracture by Flexure 072, 074 and 075

Fracture by flexure was dealt with by using three slightly different variables. Variable 072 was used to record breaks directly under the impact point; 074 and 075 were employed to record radial fractures initiated from one point from the bottom edge of cones and half cones respectively. Since the input conditions leading to the formation of these three variables are the same, the same comments can be applied to each variable. All levels of each input variable are associated with the composite fracture by flexure variables except holding position. Failure by bending or flexure only occurred in holding positions 5 and 6. Undoubtedly this phenomenon is related to the fact that specimens placed in these two holding positions were placed with their X face up, so the axis of the specimens was horizontal to the trajectory of the impactors. When the impact occurred the specimen broke in tensile failure.

d. Polar Support Fracture 006

Polar support fracture refers to specimens in which failure was initiated from the bottom of the specimen. Failures of this variety occurred 60 times and have a relative frequency of 8.3 per cent. Within the framework of the experimental design all levels of force, impactor and materials are associated with the creation of polar support fracture. However, polar support fracture was always associated with holding positions 3 and 4 with one exception, in which it occurred in holding position 2. A finding such as this is not startling as holding positions 3 and 4 are quite similar and in both cases the force from the impact drove the bottom of the specimen into the vise track, initiating failure.

e. Corner Support Failure 007

Corner support failure refers to specimens in which one or more corners of specimens resting on the edge of the vise were knocked off. Twenty-six specimens had corner support failure, giving this feature a 3.6 per cent relative frequency. All force, impactor and material levels are associated with this kind of fracture. However, as the name of the variable implies, the corner of the specimen had to be lying on top of the vise. Consequently, it is no big surprise to find that this feature is only associated with holding positions 5 and 6.

f. Pressure Flakes Induced by Vise 071

Three pressure flakes were created as a byproduct of holding specimens by their lateral edges in the vise. The flakes were detached in holding position 2 using only force level 3 and either torque level 1 or 2 on materials 1--glass or 2--obsidian. As is evident from the low frequency of pressure flakes, they are an uncommon feature. The reason

or reasons why pressure flakes occurred only once in the three separate experiment--104, 130, and 131--are ambiguous at the moment.

g. Internal Flaw or Bedding Plane 060

Eight specimens broke at internal flaws or on bedding. All specimens which failed in this manner are quartzite.

2. Cone and Negative Cone Features

a. Primary Ring Crack Circumference 010

A total of 57 ring cracks were experimentally produced. Thirty-four ring cracks form a quarter-circle, fifteen a half-circle, one a three-quarters circle and seven are complete. Complete or partial ring cracks were created in all levels of all variables except holding position 5. The reason or reasons why there are no ring cracks associated with holding position 5 is obscure. Perhaps a sampling problem is represented.

b. Secondary Ring Crack Circumference 011

The attribute of secondary ring crack circumference occurred only five times. It is interesting to note that its occurrence is restricted to holding positions 3 and 4, in which a vertical blow was delivered to the right angle surface of the material. A distribution such as this suggests that angle and placement of the impact blow may be critical elements in the creation of secondary ring cracks.

c. Primary Ring Crack Diameter 012

Forty-six ring cracks were created that have a diameter which can be subjected to measurement. Primary ring cracks which have a mea-

surable diameter are more restricted in distribution than the variable of ring crack circumference. Each level of all variables is associated with ring crack diameter with the exception of holding position. Holding positions 2, 5, and 6 are not associated with the creation of this variable, and perhaps the explanation for this phenomenon is that a smaller energy requirement is necessary for failure to occur in positions 2, 5, and 6. In other words failure occurred in these positions but advanced beyond the initial stage represented by the variable ring crack diameter.

d. Cones and Half Cones 013, 014, 015, 016, 017, 018, 019, 065, 083 and 084

Ten variables were created for the investigation of primary, secondary and incipient half and whole cones. For the sake of clarity all cone features will be dealt with in this section. As primary whole cones 015 and primary incipient whole cones 014 are quite similar, keeping in mind that incipient cones have not been freed from the negative cone, these two variables will first be discussed. Primary incipient whole cones 014 occurred twenty-three times while primary whole cones occurred a total of six times in the 720 experiments. However, four of the primary whole cones were modified by radial fracturing. Only force levels 2 and 3, holding positions 3, 4, 5, and 6 and materials 1 and 2 are associated with the formation of whole cone features. Holding positions 3, 4, 5, and 6 all share in common the fact that the material is placed at a right angle to the trajectory of the impactor. The fact that force level 1 and quartzite are not associated with whole cone features suggests that a higher energy load than level 1 is required

in the production of whole cones in glass and obsidian. It seems likely that an even higher energy load than level 3 would be required to produce whole cones in dense materials such as quartzite.

Primary half cones 083, incomplete primary half cones 084 and primary incipient half cones 013 are associated with each level of all input variables except holding position. Half cone features were produced in holding positions 4, 5, and 6 with the exception of two experiments--86 and 87--in which holding position 3 was used. It must be kept in mind that the surfaces in which cones were produced were at a right angle to the trajectory of the impactor. Probably of equal importance in the production of half cones is the distance of the impact point from the nearest edge, as they are frequently truncated by an edge.

The variables of incipient half cone 016 and secondary incipient whole cone 017 and secondary whole cone 019 were not experimentally produced. Secondary half cones occurred a total of three times and have a relative frequency of occurrence of .4 per cent. Holding position 6 and obsidian are the two major inputs associated with the creation of this kind of half cone. In view of the fact that this is a rare feature and it only occurred .4 per cent of the time, it may well be that in a larger experimental design where more experiments were conducted, it would be found that it is also associated with other input combinations. Likewise, the same argument can be applied to variable 065 secondary, incipient and partially complete conoid fracture, which occurred only once during the course of experimentation.

e. <u>Cone Segments 038, 062, 102 and 103</u>

Positive cone segments and negative cone segments are both created by the same phenomenon--radial fracturing. However, radial fracturing does not always occur both inside the cone forming positive cone segments and outside the cone area creating negative cone segments in the same specimen, but it can occur. There are some regularities which underlie the formation of positive and negative cone segments which are of interest. With two exceptions, experiments 40 and 71, positive and negative cone features resulted from the following combination of input variables: Force 2 and 3, impactor 3, holding positions 3 and 4, and materials 1 and 2. A combination of input variables such as this would only result in a high energy load being concentrated in a relatively small area. The fact that the quartzite impactors resulted in the formation of these features, not the antler tipped impactors, implies that impactor material is an important variable in concentrating energy. It seems plausible that the antler impactors are much more elastic and expand upon impact, distributing input energy over a wider surface than is the case with denser, harder quartzite impactors. The fact that holding positions 3 and 4 are associated with the creation of negative and positive cone segments again suggests a high energy concentration is necessary for the creation of this kind of feature. In these holding positions the Z axis is the upright surface which is impacted. It will be recalled this surface only measures 3/8" by 2", thereby when it is impacted a very small distance is involved for the elastic waves to reflect back from the adjacent free surfaces.

Only glass and obsidian are associated with the production

of positive and negative cone segments. It seems probable that this association should be viewed in terms of differential material properties. Obsidian and glass are not as dense as quartzite, and fail in radial fracture at a lower energy level than quartzite. One point which should be mentioned is that a number of the argillite impactors which constituted a smaller mass than the specimens being impacted literally exploded in radial fracture.

Variables 102 and 103 were used to record the faces from which negative cone segments detached. In sixteen cases in holding positions 3 and 4 negative cone segments were created in one of the X faces. Much less common for specimens held in positions 3 and 4 was the detachment of cone segments from both X faces which occurred only three times.

3. Flakes

Flakes are a major component in most lithic assemblages. A large number of flake categories with controlled input conditions have been established in an attempt to sort out the significant input variables responsible for flake production and their associated attributes.

a. Platforms 059, 078, 079, 080, 081, 082, 095, 096, 097, 098, 099

The primary flake platform alteration of pitting 078 occurred only once. With such a small sample size it would be meaningless to attach any significance to the associated input variables. Platform scratching, variable 079, did not occur at all. However, the primary flake platform alterations of crushing 080, microcracking 081 and micro-

flaking have a high incidence of occurrence. Seventy specimens exhibit platform crushing and have relative frequency of 10.7 per cent, microcracks occur sixty-two times and have a relative frequency of 8.6 per cent, while microflakes occur fifty-nine times and have a relative frequency of 8.2 per cent. The input conditions leading to the production of these three kinds of features are nearly synonymous. The dominant variable responsible for crushing is impactor type. The hard argillite impactors were associated with the creation of platform crushing, microflaking and microcracking, with the exception of three experiments in each variable where antler impactors led to crushing, microcracking and microflaking. It is worth noting that the soft impactors never led to crushing, microflaking and microcracking in quartzite materials, and are only rarely associated with the formation of three features in glass and obsidian.

The input conditions responsible for the secondary flake platform alterations of crushing 097, microcracking 098 and microflaking 099 are essentially the same as those for primary flake platform alterations with one major exception. Almost all secondary platform alterations are associated with holding position 2 with a few exceptions where holding position 4 was used. In primary flake platform alterations there is a much greater range of holding positions including positions 2, 3, 4, and 6.

A special variable 059 was created to record microflaking which occurs on the beveled platform surface outside of the negative scar on specimens held in position 2. Twenty-three specimens exhibiting this feature were created during the project. In all cases the

input variables of argillite impactor and the materials of glass and obsidian are associated. One explanation for the differential occurrence of this fracture feature is the fundamental differences in the material properties of glass and obsidian as contrasted to quartzite.

The secondary flake platform alteration variables of pitting 095 and scratching 096 turned out to be useless variables in light of the framework of the experimental design employed here, as there was not a single occurrence of either feature.

b. Lips 020 and 061

Lips were experimentally produced fifty-six times and have a relative frequency of 7.5 per cent. The total combination of all input variables is associated with the production of lips with the exception of holding position. Lips were produced only when specimens were held in holding position 2 with a single deviant experiment 64, in which a lip was created in holding position 4. Specimens held in position 2 were impacted on a beveled edge which was at a 45° angle to the longitudinal axis of specimens. Consequently, it can only be concluded that angle is the critical variable responsible in the creation of lips, not the kind of material used in the impactor as commonly suggested. In other words, the experimental evidence advanced here suggests lips on primary flakes cannot be used to distinguish between the use of hard and soft impactors as has been common practice.

Lips occurred on secondary flakes twenty-one times. It is interesting to observe that the combinations of input variables responsible for the creation of lips on secondary flakes are no different than those for primary flakes. In all instances lips are associated

with holding position 2, in which beveled edge specimens were used.

c. Bulb of Force 022 and 043

The formation of bulbs of force on primary flakes, variable 022, and on secondary flakes, variable 043, are related to one dominant variable. Like lips, bulbs of force occur predominantly in holding position 2, in which beveled edge specimens were impacted at a 45° angle to the longitudinal axis of the material. In view of the evidence that bulbs were created in holding position 2, with only two exceptions, experiments 135 and 136, it can only be concluded that angle of impact relative to the longitudinal axis of the specimen is a highly critical variable in the formation of bulbs.

A rank order scale was employed for recording bulb definition. It is interesting to note that poorly defined bulbs occurred twenty-two times, moderately defined bulbs were recorded twenty-two times and well defined bulbs were produced only twelve times. On secondary flakes nine bulbs were scaled as poorly defined, seven moderately defined and seven well defined. No attempt has yet been made to determine if there is some sort of underlying pattern such as force level which is responsible for these differences.

d. Eraillures 029, 050

Eraillures are a morphological feature which occur on bulbs. Eleven eraillures were recorded on primary flakes, variable 029, and five eraillures occurred on the bulbs of secondary flakes 050. It is evident that the formation of eraillures is mechanically linked to bulb formation. Like bulbs, the dominant variable critical in the creation

of eraillures is holding position 2, in which the striking platform is at a 45° angle to the longitudinal axes of specimens.

e. Negative Scars 100 and 101

Two additional features, microflaking 100 and crushing 101, in secondary flake negative scar alterations, are almost always exclusively associated with holding position 2. Only three exceptions exist. In variable 100 holding position 4 was used in experiment 136, and in variable 101 holding position 4 was used twice in experiments 42 and 136 respectively. Secondary microflaking was recorded thirty-two times while crushing also occurred thirty-two times. Like bulbs and lips, angle of impact is undoubtedly the critical variable responsible for the formation of this feature. It is interesting to note that although these two features are not produced exclusively by the argillite impactors, secondary negative scar crushing and microflaking is not commonly affiliated with antler impactors.

f. Hackles 023, 024, 025, 026, 044, 045, 046 and 047

Eight variables were created in an attempt to determine if the distribution of hackle marks could be explained in light of different combinations of input variables. The number of occurrences of each of these variables is not particularly large. Variable 023 occurred only once, 024 once, 025 ten times, 026 four times, 044--zero, 045--zero, 046 ten times and 047 seven times. In reviewing the input variables responsible for the formation of hackle marks, in view of the small sample size involved, it appears as if the input conditions responsible for primary hackle marks adjacent to the point of impact, hackle marks on

lateral edges, hackle marks on ribs, hackle marks at the distal end of flakes and on secondary flakes on ribs and the distal end are not essentially different. Hackle marks were only observed in all of the above variables in glass and obsidian. Perhaps this difference can be explained in light of fundamental differences which exist in the density and brittleness of the respective materials. Hackle marks occur predominantly on flakes produced on flakes detached in holding position 2. Also, in two cases hackle marks were developed on flakes which were produced in holding position 4 and in one case in holding position 6. In both situations glass was the material that failed. At present the significance of these exceptions is obscure.

g. Ribs 027, 028, 048 and 049

Four variables were created for coding ribs concentric to point of origin 027, 048 and ribs semi-circular to the point of origin 028, 049 for primary and secondary flakes respectively. Variable 027 occurred eight times, 028 forty-five times, 048 eight times, 049 thirty times. Although the numerical frequency of ribs concentric to the point of impact is rather low, a rather specific set of input combinations is responsible for the production of this feature: force levels 1 and 2, the argillite impactor holding positions 1 and 2. Perhaps crushing and microflaking would have occurred if a higher force level had been used. It seems likely that the reason why the argillite impactor is associated with this feature is that the energy load is concentrated on a smaller loci from which fracture is initiated than when the more elastic impactor is employed. The fact that ribs are only associated with glass and obsidian suggests that this variance can be explained in light of differential material properties.

Ribs which are semi-circular to the point or origin in both primary and secondary flakes are associated with both the soft and hard impactors, and like ribs concentric to the point of origin, occur only on glass and obsidian specimens. Flakes held in both holding positions 2 and 4 exhibit ribs which are semi-circular to the point of origin.

h. Distal End Morphology 030, 031, 032, 033, 034, 051, 052, 053, 054, 055, 063, 064.

The morphological feature of a hinge at the distal end of flakes is relatively rare. It was recorded eleven times for primary flakes 030 and only twice for secondary flakes 051. Hinging is associated with all levels of each input variable with the exception of holding position, in which only positions 2 and 4 are significant.

Step flakes at the distal end of primary flakes 031 occurred a total of eleven times, whereas step flakes were produced on secondary flakes 052 only three times. In examining the input variables responsible for the creation of step flakes, it is apparent that step flakes were only produced in holding positions 2 and 4. Otherwise all levels of each variable were involved in the creation of this feature.

Primary flakes which feather out at the distal end 032 occur ninety-three times and secondary flakes 053 which feather out occur thirty-four times. All possible combinations of input levels for each of the major variables in the framework of the experimental design are associated with this feature with the exception of holding position. Flakes which terminate in a feather are predominantly associated with holding position 2. In a few cases holding position 4 is significant, but only on glass and obsidian specimens.

All kinds of flake distal end morphologies recorded included primary flake outré passé variable 063, secondary flake outré passé 064 and primary flakes which are jagged and irregular at their distal ends 034. These distal end morphologies were infrequent in their occurrence. Variable 063 occurred only once, variable 064 once, and variable 034 twice. Since these features were so rare, at present it is not clear as to what the range, if any, is of input variables that are responsible for their production. Variable 033 reversal hinge did not occur during the course of the experiments.

In summary most flake distal end morphologies are associated with holding position 2, which is not surprising in light of the foregoing discussion concerning other flake variables. Distal end morphologies are mechanically linked to the production of flakes which are most readily produced when the longitudinal axes of specimens are held at a 45^{0} angle to the trajectory of the impactor.

i. Shape 040 and 056

Two categories, symmetrical and asymmetrical, were used to record the outline form of primary flakes 040 and secondary flakes 056. It is interesting to note that in primary flakes only twenty-seven symmetrical outline forms were created, whereas eighty-eight asymmetrical outline forms were produced. Likewise, a similar tendency characterized secondary flakes where seven flakes were symmetrical and thirty-six were asymmetrical.

In reviewing the input conditions responsible for the production of symmetrical and asymmetrical flakes, it is evident that all levels of all variables are associated with this feature with the excep-

tions of holding positions 1 and 5. Although holding position 1 occurs once in the formation of secondary flakes and holding position 5 is evident, these positions were not conducive to the production of flakes.

The wide range of input variables does not suggest an immediate solution as to why there are far more asymmetrical flakes than symmetrical ones. Perhaps the answer lies in where the ring cracks began to form relative to the dorsal face of the specimen. If a ring crack begins closer to one edge than the other, then the crack would theoretically advance or spread to the dorsal face which was closest first, resulting in fracture front asymmetrical to the point of impact and hence an asymmetrical flake.

j. Length 035 and 041 and Width 036 and 042

Maximum length-width measurements were taken on primary and secondary flakes. Length measurements on 118 primary flakes were taken and 036 were recorded for width, while forty-three measurements were taken on secondary flake length 041 and width 042. In reviewing the measurements which were ranked in 0.5 cm intervals, it is clear that the majority of flakes have length-width measurements under 2.5 cm. However, secondary flake length-width measurements are much more evenly distributed throughout the 4.0^{+} cm. ranked scale. No attempt has been made to determine if a particular force level is associated with a particular range of length-width measurements.

Length-width measurements, like other flake variables, occur in conjunction with all levels of each input variable with the exception of holding position. Only positions 2 and 4 are associated with length and width. It will be recalled that holding position 4 only dif-

fers from position 3 in that the impact point on the specimen is adjacent to the edge, while the impact point on 3 is oriented and equidistant between the two edges. Thus, in specimens in which the surface of the material to be impacted is at a right angle to the impactor, it seems likely that the distance from the nearest free surface is a critical variable in determining what kind of morphological features are created. In other words, holding position 3 is associated with the production of cone features generally, not flakes.

k. Face of Flake Axis 085, 086, 087, 088, 089, 090, 091, 092, 093, 094

In view of the fact that all flake features were produced in holding positions 2 and 4, it is not surprising to find that the 118 flakes which were produced occurred on the X face. The other variables 086--094 proved to be useless categories for recording flake axis.

l. Incipient Flakes 057 and 058

Incipient flakes are flakes which are not totally detached from the parental block of material. The input conditions responsible for the formation of the twenty-two incipient flakes are not essentially different than the conditions responsible for the production of primary and secondary flakes, with one exception. A number of incipient flakes were created when specimens were held in position 3. As specimens held in this position were struck centrally on the Z face, not on the edge as in position 4, it seems likely that a higher energy input would have been necessary to result in the detachment of flakes held in position 3. As would be expected, the twenty-two incipient flakes were all detached from the X face 058.

4. Radial Fracture 067, 068, 069 and 070

Four variables were created to record the number of radial cracks which terminated on the four edges. In reviewing the input variables responsible for the production of radial cracks, it is clear that all levels of all variables except holding position are associated with the creation of radial cracks. Radial cracks are produced by at least two failure mechanisms: fracture by flexure and by conoid reverse fracture. In both cases, these failure mechanisms become significant when the thinnest axes of specimens are perpendicular to the trajectory of the impactor. Radial cracks were associated with holding positions 5 and 6, as would be expected.

The absolute number of radial cracks per specimen edge form an interesting pattern. Edges 1 and 3 were in contact with the vise while edges 2 and 4 were free, unbounded surfaces. Forty-two and forty-six cracks terminated on edges 1 and 3 respectively, and one hundred and three and ninety-six cracks terminated at edges 2 and 4.

Another point of interest is the distribution or number of cracks per edge. On edge 1, thirty-three specimens had one crack, eight had two cracks and one had four cracks. Similar figures were obtained for edge 3 in which twenty-six specimens had one crack, seventeen had two cracks, two had three cracks. In contrast to these figures are the number of cracks occurring on edges 2 and 4. On edge 2, sixty-two specimens had one crack, nineteen had two cracks, sixteen had three cracks, and four had four cracks. On edge 4 sixty-four specimens had one crack, sixteen had two cracks, eight had three cracks, seven had four cracks and one had five cracks. What the above figures suggest is that the vise sup-

port under edges 1 and 3 absorbed a certain amount of elastic energy, reducing the incidence of radial fracture on these edges.

D. Summary and Conclusion

In Chapter III the hypothesis was advanced that the decisions made in the second level of the proposed cognitive model are synthetic in nature. In other words, the diverse elements of force, impactor, holding position, material and shape must be articulated for inducing a controlled fracture in lithic materials. A dynamic interaction occurs between cognition, behavior and material in bringing about a change in a lithic item. The question has been raised as to whether or not the synthetic decision sets which led to a particular material transformation can be reconstructed from the attributes which are created.

A dynamic loading device, the "stainless steel Indian", was used to implement 144 controlled experiments, replicated five times each, in which the input conditions "decision sets" could be related to output morphology. The experimentally generated data base has been used to investigate and exemplify the applicability of two alternative classification procedures which could be used to link morphological features to the decisions which led to their formation. If the assumption is used that each combination of input variables will result in the formation of a unique cluster of attributes, it would be possible to reproduce experimentally attribute clusters and to use them as an inferential framework for interpreting prehistoric decision sets. An attempt was made to test the above proposition. The output variables from all of the experiments were compared in an attempt to determine if there was an overlap

in output variables although input conditions were not identical. Four major patterns of overlapping variables were found as a consequence of this analysis. The implications of the overlapping patterns of output variables for the decision model approach is evident. The premise that each distinct combination of input variables will result in a unique combination of output variables must be rejected as an unsound premise which will have little utility in helping reconstruct input decisions.

The second premise examined which can be used in establishing a classification of input decisions inferred from output morphology is particularistic in nature. The fundamental premise which underlies this approach is the idea that individual output variables may be sensitive indicators of individual decisions in a decision set. Thus by using a controlled experimental research design approach such as undertaken in the present study, it may be possible to link particular decisions or ranges of decisions with specific output attributes. Once a sound inferential framework is established for particular features, the possibility will then be opened for looking at the linked attributes on specific specimens as a group which reflect a decision set.

The third section of the paper was devoted to analyzing the input conditions responsible for the creation of outout variables in attempting to determine the applicability of the above particularistic approach. An attempt will not be made to review the findings made on each particular variable here, rather, discussion is focused on the theoretical implications of the particularistic approach.

Three major trends are apparent in regard to the relationships

which exist between input decisions and output variables. Some variables, such as lips and bulbs of force, are almost always associated with a dominant input variable. In the above cases the variable happens to be angle to impact. It is interesting to note that lips have traditionally been interpreted as an indicator of soft hammer impactors. However, under controlled experimental conditions it was demonstrated that lips are associated with both hard and soft hammers when the longitudinal axis of the specimen is at a 45° angle to the trajectory of the impactor.

Another trend is that similar or identical input conditions can result in slightly different but related output variables. For example, the platform alterations on primary and secondary flakes of crushing, microflaking and microcracking are almost always exclusively associated with the use of (hard) non-resilient argillite impactors.

A third interesting trend revealed by the analysis is that a particular feature may be associated with several alternative input conditions or decisions. For example, primary half cones were created in holding positions 4, 5, and 6. Common occurrences such as this in the experimental data suggest that before a solid inferential framework can be established for interpreting decisions, many more experiments must be conducted, employing a much broader range of input conditions than those selected for use in the present study. Such an approach could lead to the development of a solid inferential framework in which the analyst can make probabilistic statements as to the decisions or decision sets which led to the production of an attribute or attributes.

The experimental work which was undertaken in the present

study should be viewed as a pilot project. The results obtained in the study should not be used as an inferential framework for interpreting prehistoric remains because too few experiments were conducted to provide statistically valid results. Nevertheless, it is my belief that the particularistic approach suggested here can provide a very meaningful avenue for future research.

CHAPTER VII

APPLICATIONS OF THE COGNITIVE MODEL TO TYPOLOGICAL ISSUES: A REINTERPRETATION OF THE CLOVIS PROBLEM, AN EXAMPLE

A. Introduction

The objectives undertaken in the present Chapter are to discuss how decision model types can be created, and what their relevance is for typological problems. The discussion presented in the following pages is divided into two major sections. First, a general methodological discussion is advanced concerning the application of the cognitive model to typological problems. Emphasis is placed on clarifying the attribute concept which underlies the older typologies, as well as the one suggested here. In the second section decision model types are employed to analyze the Clovis "migration vs. *in situ* development" controversy.

B. Applications of the Cognitive Model

The reader may well ask himself, what utility does the conitive model presented in Chapter III have for my typological problems? The major value of the model lies in the fact that it provides a systematic theoretical framework which can be used in the interpretation of prehistoric remains. In other words, it provides a dual body of

theory concerning both materials and cognition which can be used to help select and define relevant decision attributes, which in turn are employed in defining decision model types. The major difficulty most analysts will probably encounter if they attempt to create decision model types, even if they are appropriately prepared from a theoretical point of view, is how to observe or select attributes on prehistoric artifacts which reflect decisions on the part of the lithic craftsman who made the tool. The answer to this question is not simple and the accuracy obtained will be partly contingent upon what level the analyst is attempting to characterize. Certainly, as demonstrated in the previous chapter, many of the attributes which characterize the second level of decision-making are at present poorly understood and will necessitate a great deal more research. However, other levels of decision-making are more amenable to research.

Perhaps the best way to gain an understanding of the relevant attribute categories within the theoretical framework advanced here is to attempt to reproduce artifacts experimentally. Such an approach forces the analyst to consider the alternatives which are possible, as well as the physical limitations the material places on him.

In formulating decision model types, it must be understood that there are major qualitative differences which exist in the nature of the cognitive processes, at the material cognition interface, which result in the creation of distinctly different kinds of attributes in the postulated levels. The first level which is concerned with materials is essentially an additive process; that is, materials are acquired for subsequent modifications. The second level which concerns the modification of materials can be characterized as a synthetic process, as a

number of input variables are synthesized in the fracture process which results in the transformation of materials which are characterized by material attributes such as bulbs, ribs, hackle marks, etc. Both the internal and external levels of structuring should be viewed as subtractive processes. The internal structuring level of the model is designed for the investigation of the relationships which occur between constructional unit attributes such as kind of platform preparation, direction of flaking, spacing between flakes, etc. Last but not least, external structuring is concerned with the investigation of formal outline attributes such as length, width and thickness, which are created through the application of internal structural rules. Thus, in summary, the cognitive model explains attributes in quite a different manner than the traditional morphological approaches. In short, lithic remains do not manifest just one kind of attribute, but four distinctly different kinds of attributes which are created at the interface between cognition and materials, and are based on distinctly different kinds of cognitive processes.

With the recognition of the fact that artifacts manifest four distinct kinds of attributes, analysts may employ new methodological procedures in attempting to explain inter and intra assemblage variability and regularities. Traditional morphological typologies have placed major restraints on creative thinking, as morphological types are commonly based on prior assumptions at the class level. For example, a projectile point type might be described in terms of outline form properties of specimens. Likewise, the same procedure may be applied to knives. The problem with this procedure is that there are generally not any clear-cut criteria stated for distinguishing if a specimen belongs

in the class projectile point or the class knife. Problems such as this can be avoided by using a great deal of care in constructing attribute lists. Assumptions such as these can be prevented through the use of inferential statistics. Rather than investigating the variability of types which exist in an undefined class, it is a much sounder procedure to define one universe of investigation. Obviously, the size of universe chosen for investigation will vary from problem to problem. However, to avoid the issue of inserting typological assumptions into one's attribute list, it is contended that all stone implements should be coded and subjected to statistical analysis at the same time.

The question may arise as to what attributes must be present on a specimen before it can be admitted to the universe. The answer is that specimens must exhibit one or more of the following characteristics: crushing or scratching on a platform area, lip on ventral side of platform, bulb of force, hackle marks, eraillure flake, ribs, and intersection of flake surface on dorsal face which forms some sort of ridge. If specimens do not exhibit one or more of these features, they must be considered to be non-artifacts or belong in some other cultural domain.

The universe of investigation which might be constituted from a number of assemblages (populations) is subjected to evaluation in light of a structured attribute list. As previously mentioned, artifacts exhibit at least four kinds or levels of attributes and therefore these differences should be taken into consideration in constructing an attribute list. The attribute key should be structured so that attributes from each of the respective levels are grouped together so that data created by distinctly different kinds of cognitive processes are not

mixed. Data structured in this manner then may be subjected to a variety of statistical manipulations which are selected in reference to whatever happens to be the analyst's objective.

Not all levels of the proposed model have to be reflected in the attribute list. As previously indicated, the position taken here is that a highly complex dynamic interaction occurs between the input and output variables. It is a dangerous procedure to make inference from the output as to what the input variables were when evaluating a prehistoric specimen, unless one has control information available for interpretive purposes. Perhaps for the average archaeologist it would be best to drop this level of analysis when constructing his attribute list. Also, it should be pointed out that if the analyst wishes he can include other levels in the attribute list than the ones mentioned here. For example, functional attributes can be included. However, it should be noted that functional attributes may also be the product of a dynamic interaction between cognition and materials--much in the same way as is the second level of the model. If technological and functional attributes are included on the attribute list, it is worth remembering that at present no solid inferential frameworks have been established which can be employed for the interpretation of these kinds of attribute patterns.

The analyst is on much safer ground when he attempts to identify attributes in the first, third and fourth levels of the model, as their creation resulted from fairly straight-forward processes. As for the first level, methods for material identification have been well worked out in the discipline of geology. The third and fourth levels, which investigate the subtractive processes involved in tool production,

do not require the analyst to undergo extensive training so that he can construct meaningful attribute lists. The stimulus for the attribute classes which are created should come from the artifacts themselves. What is involved is nothing else than straight observation. Once a set of statistics is selected and the data are computer-processed, hypotheses must be advanced to explain the resulting statistical patterns. Hence, the analyst's perception is strongly influenced by prior knowledge at two stages of investigation: when attributes are selected and when attribute clusters are interpreted. Thus, it seems unlikely that it will be possible to remove these subjective elements from the analysis. However, it is certainly possible to improve one's theoretical and practical knowledge through reading, by performing practical experiments and by viewing the movies which are now available regarding tool making.

C. Reinterpretation of the Clovis Problem

Once decision model types are created, they can be used to help resolve typological problems which entail decisions regarding the separation of the fundamental cultural processes of migration, diffusion, *in situ* development and trade, as well as linking different aspects of a seasonal round of activities by the same cultural group, all of which are responsible for the creation of inter and intra assemblage variability. In other words, before prehistoric culture systems can be defined in light of their major limiting factors--time and space--assemblage variability on which such definitions rest must be explained. In attempting to demonstrate the utility of decision model types, the con-

troversy as to whether Clovis assemblages involve migration, diffusion, or *in situ* development is examined.

1. Literature Review

Vance Haynes (1964, 1966 and 1970) postulates a single Clovis migration from the Old World on the basis of a series of radiocarbon dates from the southwest and southern and west central plains to explain the sudden occurrence of Clovis projectile points and other associated material remains. These dates cluster between 11,500 and 10,600 years B.P. (Haynes 1970:79). Haynes is cognizant of the variability of Clovis assemblages. However, he explains this variability by subsuming it in his migration hypothesis with the suggestion that there is as much intra-site variability as inter-site variability (Haynes 1966).

Alan Bryan (1965 and 1969), on the other hand, postulates the Clovis tradition represents an *in situ* development. He argues that the Clovis tradition developed in the Americas from a pre-existing large leaf-shaped point tradition that had arrived in early or middle-Wisconsin times. Furthermore, it is suggested on the basis of both faunal and geological evidence that the Keewatin and Cordilleran ice sheets were coalesced as late as 9,000 years ago. As the ice retreated it is suggested that the Paleo-Indian traditions also moved northward.

As the above argument now stands, it is based on geochronological evidence, and its resolution can only come about through more field work which involves the location and dating of more Clovis sites which exist in key topographic positions. Although there are a number of peripheral arguments which surround the Bryan-Haynes controversy regarding geological interpretation and the modicum of information which supports the large leaf-shaped point hypothesis, the objective

here is to examine an aspect of the argument which is commonly overlooked because of the emphasis of traditional typologies on outline form.

2. The Clovis Technological Transformation

a. The Sudden Appearance of the Clovis Tradition

The questions at stake here are how to explain the sudden appearance of Clovis assemblages which do not have any clear-cut antecedents, and what is the meaning of inter- and intra-assemblage variability? In attempting to answer the first question, let us look at the operational nature of the cognitive tool making model depicted in Chapter III, Figure 1. It is clearly a hierarchical flow structure constituted of a series of levels. In an article entitled, "Hierarchical Restructuring", John Platt (1970) indicates that one of the characteristics of hierarchical flow structure orgnizations is the periodic occurrence of self-generated jumps which results in the transformation of the flow system organization. Platt does not deal with specific causes leading to structural reorganizations; however, without question innovation and the diffusion of innovations are prime causal candidates for implementing technological transformations when dealing with technological systems.

In returning to our question concerning the sudden appearance of Clovis, it is postulated here that a fundamental innovation occurred at the materials level which triggered off a set of reorganizational and innovative events in the higher decision levels involved in tool production. Furthermore, it is argued that the appearance of the Clovis tradition represents a cognitive shift which involved the restructuring of tool making grammars, and that one should not neces-

sarily expect the antecedent of the Clovis tradition to be tool forms which are similar in appearance to Clovis artifacts.

It is postulated that heat treatment was the catalytic innovation which set off this chain of events. Crabtree and Butler (1964) were the first to report on the widespread aboriginal use of heat treatment for the alteration of silicious materials, so they would be more amenable to flaking. Crabtree has observed that jaspers, cherts, and flints used by aboriginal peoples are extremely difficult to pressure flake in their native state. But when these materials are heat-treated, they acquire a dull, greasy lustre and may readily be pressure flaked. Purdy's (1970) and Purdy and Brooks' (1971) quantitative studies on Florida cherts indicate thermal treatment of silicious materials results in: (1) the removal of interstitial water; (2) certain non-SiO_2 materials fluxing together as microcrystals, and (3) minute amounts of iron being responsible for color changes. Another change which is admittedly subjective in nature and which has not been noted by either Crabtree or Purdy is the relief of internal stress fields through thermal flexing of the material.

Out of the above-noted changes the one of major evolutionary consequence to lithic technology is the fluxing which takes place between microcrystals. Crabtree and Butler (1964) have noted that thermally altered materials flake more readily than before they were heat-treated. I suspect the underlying explanation for this phenomenon is that the voids between particles and/or microcrystals provide interfacial free surface boundaries which interfere with wave reflections and refractions which accompany the normal fracture process. However, when fluxing occurs these voids are bridged, thus removing the inter-

facial boundaries between microcrystals, thus permitting cracks to propagate much more readily.

The first recorded occurrence of heat-treatment in the new world may be a chalcedony artifact associated with a radio-carbon date of 12,500 B.C. ± 500 years at Wilson Butte cave in southern Idaho (Crabtree 1969:366); however, apparently this thermal treatment technique did not receive widespread application until Clovis times. The invention of the thermal alteration process permitted tool makers in the Clovis tradition to tap the extensive North American Cretaceous flint deposits (Shepard 1972:40), as well as chert formations from which most refined Clovis implements were manufactured.

The essence of the heat treatment discovery to lithic technology in general is that its application resulted in the creation of an essentially new material which enabled artisans to apply new procedures to fashion implements. It is no accident that the earliest projectile point traditions are coincident with the appearance of heat-treated materials. By thermally altering materials, early artisans were able to change the material parameters which had previously limited their ability to produce more sophisticated tool forms such as pressure flaked projectile points. The transformation which occurred resulted in restructuring and expansion of procedural rule repertoires, which in turn permitted the tool maker to gain a greater degree of control over variability which commonly accompanies the fracture process.

In summary, it is here suggested that to search for the antecedents of Clovis tool forms as one would search for early evolutionary forms in a paleontological sequence will be a futile effort. Rather, heat-treatment changed and expanded the limiting parameters

placed on the tool making behavior of early artisans. This shift permitted craftsmen to restructure and add to their repertoire of procedural rules, a situation which enabled them to produce a much wider and new array of tool forms than had been previously possible.

b. Migration, Diffusion or In Situ Development

Now let us turn to the second but related question of determining if the emergence of the Clovis tradition represents a single migration, or diffusion and *in situ* development. One point must be made explicit before proceeding, for the levels in the proposed systemic model are untested hypotheses concerning the operational nature of cognition. Although these hypotheses are testable, they have not been applied in contemporary cultural situations.

Questions concerning the identification of migration, diffusion, *in situ* development and trade can be resolved by employing a special analytic procedure which is termed *cross level analysis*. One way of conducting this kind of analysis is to predict the kind of inter-level patterning which would be expected to accompany a particular kind of process. Next, these predictions can be tested by making actual observations on artifacts recovered from distinctly different assemblages. What follows is an example of this form of analysis.

If the sudden appearance of the Clovis tool making tradition represents a single population of immigrants, as Haynes (1967 and 1969) has suggested, one would expect a high degree of intra-and inter-site homogeneity in all procedural levels when the same materials are used. On the other hand, if resident populations existed, as Bryan's (1969) hypothesis indicates, one would anticipate quite another form of cross

level patterning in making interassemblage comparisons.

In attempting to understand the nature of patterning which would occur if _in situ_ development and diffusion were the case, it is instructive to review what is known as the "Deutsch Theorem", which states, "that any restructuring (in hierarchical structured flow systems) has to be built around the largest well-functioning sub-systems . . . " (Platt 1970:52). What this means in terms of our problem is that if ideas concerning technology are restructured, the restructuring is guided in terms of a higher stable subsystem. In our case we would have to postulate that a variety of areal cultures had a superstructure pattern based on big game hunting. Undoubtedly innovations such as heat treatment and the pressure flaking which enabled artisans to make projectile points would have increased the efficiency of the superstructure pattern and could have readily diffused cross-cutting cultural boundaries. If the fundamental ideas of heat treatment, pressure flaking and the production of fluted points diffused across cultural boundaries of resident populations, one would expect inter-assemblage variability when comparing manufacturing procedures within the confines of the upper two levels. The rationale for this idea is that although certain new unique procedures may diffuse, the majority of procedural rules in a system will simply be restructured within the recipient culture to fulfill the objectives of a new goal. Thus, one would expect intra-assemblage homogeneity but inter-assemblage variability at both levels.

In attempting to test the validity of the postulated cross level patterns, one class of artifacts--projectile points--from four Clovis sites will now be examined. Included are specimens from the

Anzick site located in southwestern Montana, the Simon site of south-central Idaho and the Naco and Murray Springs sites which occur in southern Arizona. These four sites have been chosen for two reasons: the Anzick and Simon sites are separated from the Murray Springs and Naco sites by a considerable geographical distance; secondly, each site is characterized by a substantial projectile point collection which facilitates the task of conducting meaningful inter-assemblage comparison.

A photo-inspectional methodology was employed in conducting the comparisons. Colored 135mm photographs of the Anzick, Simon and Murray Springs artifacts were compared with each other, as well as with Haury's (1953: figures 6-7) black and white plates. In addition, information on the Simon and Anzick specimens was acquired through first-hand observations. Mention should be made of the fact that these comparisons were made possible by the generous contributions of Earl H. Swanson, who made available the Simon Casts for study and photo purposes, and C. Vance Haynes, Jr., who sent colored slides of Murray Springs artifacts recovered from activity areas 4-8. Also, if the reader is interested, Butler (1963) has illustrated the Simon collection.

The descriptive observations which follow are structured in view of the results obtained from the comparisons. Since the production strategies used by the Anzick and Simon craftsmen are identical, as are the Naco and Murray Springs strategies, the following organizational pattern is used to present this information. First, the Simon and Anzick specimens are described in terms of the upper two levels of the cognitive model. Next, the Naco and Murray Springs tool

making procedures are described and then contrasted with the northern Clovis assemblages.

c. The Anzick and Simon Collections

The Anzick site is a Clovis burial locality situated in southern Montana, near the small community of Wilsall. The site was accidentally discovered in 1968 when two construction workers were removing fill from under a collapsed rock shelter. The red ochre-covered remains of two sub-adults were found in association with over 100 stone and bone implements (Lahren and Bonnichsen 1972).

Like the Anzick site, the discovery of Simon site was made through a fortuitous discovery by Mr. W. D. Simon while scraping a roadway along the edge of a plowed field near Fairfield, Idaho. As Butler (1963:22) indicates, the brief road-scraping episode resulted in the complete removal of an artifact bearing level which was apparently extremely limited in extent.

The Simon site may also be a burial locality. Although no human skeletal material was found at the site, several other lines of evidence support the burial hypothesis. A few of the artifacts still have bits of red ochre in cracks and crannies on their surfaces, as do the Anzick specimens. The site is obviously not a work shop as no flaking debris was found, and furthermore the composition of the artifact assemblage is quite similar to that of the Anzick collection. Assemblages from both areas are predominated mostly by exquisitely-made bifaces and projectile points which were produced from aesthetically-beautiful materials.

The stone implements from the Anzick site are made from

Madison limestone formation cherts which occur in many different facies in western Montana and Wyoming. In attempting to determine if the Anzick stone artifacts had been heat-treated, samples of fresh, non-weathered Madison limestone flints were collected from the Van Auchen Quarry near White Sulphur Springs, Montana, so that heat treatment experiments could be conducted. The yellow-brown flints placed in sand under a small charcoal biscuit fire for two or three hours exhibited a major color change. A red rind less than a centimeter thick appeared on the surface, and when it was removed by flaking the interior of the experimental samples had become darker and acquired a greasy lustre.

It is of no small interest that the single blade recovered from the Anzick site exhibits the same red rind, which is a product of thermal alteration, as do the experimental specimens. Further evidence of heat treatment of the Anzick specimens is documented by the existence of relict dull areas surrounded by vitreous flaked surfaces on several specimens. These dull areas indicate that a portion of the specimen had not been flaked subsequent to thermal alteration (Purdy 1971:91).

A well-defined tool producing strategy was employed by the craftsmen who made the Anzick and Simon specimens. The normative internal structural relationships (the third level of the cognitive model) which cross-cut both projectile point and biface specimens will first be examined. Continuous longitudinal platforms were prepared for the removal of thinning flakes by trimming edges as a 45° angle, creating a continuous platform from which flakes can be removed. Remnants of these platforms can commonly be seen along artifact edges. The act of preparing a continuous beveled platform as a single operational procedure permitted artisans to shape the outline form of the specimens.

Spatulate flakes were directed from the beveled platforms horizontally toward the midline of both bifaces and projectile points. The spacing between flakes, particularly in the projectile points, is highly regular, suggesting the use of a pressure flaker. Some of the spatulate flakes which were removed from the bifaces are very large, suggesting that a punch may also have been employed. When analyzing stone artifacts, in some instances it is possible to determine the direction in which the tool maker worked when removing a sequence of flakes from a point. However, this is not the case with the Anzick specimens, as sequences were interrupted to remove high spots from the artifact face undergoing modification at the time. Last but not least, it should be noted that the edges of the spatulate flakes do not merge until a few centimetres in from the edge of the artifact. In effect, a triangularly-shaped remnant surface is left between the flakes. In some cases this remnant has subsequently been purposefully removed when thinning and sharpening the edge.

Now attention will be turned to describing the external structuring or outline form of the two collections (the fourth level of the cognitive model). The overall similarities between the two collections are remarkable. The Simon projectile points are, on the average, slightly longer than the Anzick specimens. The points from both sites are characterized by having slightly concave bases and straight, lateral edges which converge to a tip creating a triangular lanceolate outline form. Cross-sections of the specimens tend to be flat as a consequence of the use of the beveled edges for the removal of spatulate flakes. Since there was no dominant center ridge to guide the flakes detached in the fluting process, the flutes tend to be short.

Edge grinding occurs in the concave base and down the lateral edges to a point which is adjacent to the terminal ends of the flutes.

A great deal of variation exists in the outline forms of the biface forms from the two sites. The range of variation forms a continuum of small to large and from ovoid to bipointed. To date, no statistical analyses have been conducted to determine the modal tendencies of this variation.

d. The Murray Springs and Naco Collections

The Naco and Murray Springs sites of southern Arizona represent quite different facies of the Clovis tradition than the northern burial sites. The eight projectile points Haury (1953) illustrates were associated with a Columbian mammoth kill site, and the specimens recovered from Murray Springs are associated with a campsite where tool making activities were carried out.

The internal structural relationships which characterize the Murray Springs and Naco projectile points will not be discussed, as bifaces do not occur in significant numbers. One of the key differences which separates the Naco and Murray Springs projectile points from the Anzick and Simon specimens is the kind of platform preparation that was employed. The southern specimens do not exhibit the beveled platform remnants so characteristic of the northern fluted points. Instead of preparing a continuous platform, the tip of the flaking implement was apparently placed on or slightly behind the leading edge which was being subjected to pressure flaking. The highly-acute platform angles were used in the removal of spatulate flakes which were directed toward the midline of the specimens. The spacing between the spatulate

flakes is quite regular, indicating that artisans had a considerable amount of control over their material and suggesting the use of a pressure flaking implement. It was impossible, due to the average quality of the photographs, to determine if the spatulate flakes were removed in a definite directional sequence. The triangular-shaped remnants left between the proximal ends of the expanding spatulate flakes were removed in almost all cases, leaving a rather sharp edge on the projectile points.

Now attention will be turned to the description of the outline form (the fourth level of the proposed model). The outline forms of the Murray Springs and Naco projectile points vary significantly from the northern specimens. The point bases are substantially more concave and the lateral edges expand outward from the base to mid-length of the point before swinging back and converging to a tip. Thus, the excurvate sides of the specimens approximate a leaf shape with the exception of the base.

The cross-sections of the southern points are much more lenticular than the Anzick and Simon specimens. The reason for this lies in the fact that cross-section profiles are mechanically linked to the kind of platform preparation employed. As will be recalled, the 45° angle levels used in the production of the Simon and Anzick specimens resulted in moving the leading edge closer to the face from which the spatulate flakes were removed, and thus created a flat cross-section. In the Naco and Murray Springs specimens the leading edge from which flakes were removed was centrally located between the sides. The ultimate effect of this procedure led to the creation of lenticular cross-sections. It is interesting to note the length of flutes in the

south are generally longer than the north. Undoubtedly the lens-like cross-sections provided more of a central ridge to guide the fluting flakes than did the flat cross-sections of the northern points.

Many of the descriptive statements which have been advanced in the foregoing pages are qualitative judgments. However, it should be pointed out these evaluations can be verified by conducting a much-needed quantitative investigation. If all the specimens would have been available for investigation, an analysis of this nature would have been undertaken.

D. Summary and Conclusion

The objective of the present Chapter has been to discuss how decision model types are created and what their relevance is for typological issues. The position has been advanced that the analyst should not attempt to construct types without a body of theoretical knowledge which can be used to help frame meaningful categories. The model presented in Chapter III, Figure 1 provides an interpretive analog based on a dual body of theory concerning both material and cognition, which can be used to explain material remains. It has been postulated that there are at least four distinct kinds of attributes which are created at the interface between cognition and materials. The cognitive processes involved in tool making are not synonymous at each level. Rather, the first level, the collection and selection of materials, represents an additive process. The second level in which fracture is initiated entails a dynamic synthetic process in which input variables are combined in unique combination for the production of a

desired output morphology. Both the third and fourth levels are subtractive processes which are used to shape materials into desired forms.

In view of the fact that artifacts do exhibit distinctly different kinds of attributes, it has been suggested that attribute lists should be pre-structured so that attributes from each level will be grouped together. Once attributes have been selected and placed in their respective levels and the appropriate statistics which group attributes into decision models, the analyst may choose to conduct a special kind of investigation termed cross level analysis in attempting to sort out which cultural process, or combination of processes, are the most likely candidates for explaining intra- and inter-assemblage variability. As an example of this form of reasoning, the cognitive model approach utilizing a cross level analysis was employed in re-evaluating the Clovis controversy.

Vance Haynes (1967 and 1969) and Alan Bryan (1965 and 1969) have postulated two competing alternative hypotheses to explain the occurrence of the Clovis tradition in the New World. Haynes suggests that since Clovis sites consistently date between 11,520--10,960 years ago and that there is no clear-cut antecedent to the Clovis tradition in the New World, this evidence most clearly supports a migration hypothesis. He therefore argues the Clovis immigrants came to North America from the Old World via the Bering land bridge. Bryan (1965:14-19) proposes a counter-thesis which is based on a biological model. He argues that large leaf-shaped points are the logical antecedents as well as the catalytic agent which led to a multilineal development in which a number of distinct projectile point traditions emerged. In Bryan's evolutionary model Clovis is one of the most sig-

nificant of several traditions which developed at approximately the same time.

In attempting to come to grips with the Haynes-Bryan controversy, a major point became apparent from the outset. Both investigators use the same form of reasoning and are concerned with the origin question of, "Where did Clovis come from?" The emphasis of these studies is on what is here termed "lineal or evolutionary thinking". Major points of contention have arisen concerning the interpretation of carbon dates and as to what constitutes the evolutionary antecedents of the Clovis tradition.

An attempt has been made to re-evaluate the Clovis problem by employing the upper two levels of the proposed systemic cognitive model advanced in Chapter III. In trying to unravel the complex question of whether or not the sudden appearance of the Clovis tradition represents migration, diffusion and/or _in situ_ development, two related questions have been examined in light of the hierarchically-oriented cognitive flow structure model.

The first question dealt with concerns the sudden appearance of the Clovis tradition which does not have any clear-cut antecedents. The hypothesis has been advanced that a single invention--thermal alteration of lithic materials--greatly altered the nature of the relationship which existed between man and materials during the Clovis period. The limits placed on tool making behavior were greatly relaxed as an essentially new material was created as a consequence of heat treatment. The changes which occurred permitted creative artists to restructure as well as expand the procedural rules used in tool making.

Although the heat treatment hypothesis is quite logical, it is at present not fully confirmed. Certainly the data examined from the Anzick site support the hypothesis. The fact that projectile points from the other three sites are pressure flaked and the fact the photos illustrate the greasy lustre quality mentioned by Crabtree and Butler (1964), provides partial confirmation of the widespread use of heat treating techniques in early times. Since the criteria presently available for distinguishing heat treatment is rather subjective, positive confirmation of the above hypothesis must await the development of new quantitative techniques. It seems highly probably that the non-destructive sonic velocity techniques which measure the elastic moduli of materials might actually be applied to archaeological specimens to determine whether individual specimens are heat treated.[3] It seems probable that the innovation of heat treatment enabled the early Americans to tap extensive deposits of flints and cherts across the country as a consequence of the structural reorganization and acquisition of new procedural rules. The Clovis period witnessed a virtual population explosion of new tool forms, i.e., projectile points and large, thin bifaces, which need not have had any clear-cut antecedents.

The second and perhaps more fundamental question which is dealt with in light of the systemic model concerns, "What is Clovis?" An attempt is made to sort out the migration vs. diffusion and in situ development hypotheses by employing an analytic procedure here termed cross level analysis. This method provides the investigator a means for systematically investigating inter-assemblage variability. Artifact

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[3]Dr. David Cruden must be given credit for this insightful suggestion.

assemblages from four sites--Anzick, Simon, Naco and Murray Springs--were analyzed in terms of the procedural rules used in their production. Only the internal and external levels of formal structuring were incorporated into the analysis.

The proposition was advanced that if a single population of immigrants were responsible for the production of Clovis sites, a high degree of inter-site homogeneity should exist in all procedural levels. On the other hand, if _in situ_ development and diffusion are the major processes responsible for the widespread but contemporaneous occurrence of Clovis sites, one can expect quite another form of patterning in making cross level interpretations. Although certain new unique procedures may diffuse, the majority of procedural rules in the system will simply be restructured to fulfill the objectives of a new goal. Thus the analyst should expect intra-assemblage homogeneity but inter-assemblage variability at both levels.

Two major contrasting patterns emerged as a consequence of the study which support the _in situ_ development--diffusion position. It was found that a high degree of homogeneity exists between the Simon and Anzick site specimens. Likewise, identical production procedures were apparently used in producing the Naco and Murray Springs projectile points. However, considerable variance exists in the procedures to make fluted points between the north and south. A major characteristic of the strategy used in the north was to produce continuous 45° angle platform edges from which large, thin spatulate flakes could be removed for thinning purposes. In the south the leading edge of the specimen from which flakes were removed was maintained at an equidistance from

either side. The effect of using this kind of platform as opposed to a beveled platform resulted in the production of specimens which have a lenticular cross-section.

Several major differences also occur in outline form. While the northern specimens have a slightly concave base and short flutes, specimens from the south are characterized by deeper concave bases and longer flutes. The Naco and Murray Springs specimens have lateral edges which expand outward from the base approximately to the mid-length of the point before converging to the tip. Thus, the southern points have a leaf shape, with the exception of the base, whereas the straight-sided northern points have a triangular outline.

The above differences clearly indicate that the variation which exists between the northern and southern specimens is the product of distinctly different decision models in tool making operations. Therefore, on the basis of the qualitative data which has been advanced, it seems likely that the widespread occurrence of fluted Clovis points does not represent the activities of a single cultural group. Rather, it is hypothesized that the diffusion of a single innovation--heat treatment--made it possible for pre-existing resident social groups to restructure and add new rules (including the concept of fluting) to their tool making procedural grammars.

The subsystem or pattern which cross-cuts or links local groups in the Clovis tradition was the practice of hunting big game animals and common hafting methods. With the advent of heat treatment and pressure flaking there could be little doubt as to the utility of these inventions for improving the existing weaponry system.

CHAPTER VIII

CONCLUSION

A. Introduction

The question of how prehistoric cultural systems can be isolated in time and space, using lithic remains as a data base, has been examined in the foregoing study. Two major alternative analytic frameworks have been outlined referred to as the morphological taxonomic approach and systemic cognitive model, which can be used for resolving this question. The merits and shortcomings of these two approaches are synthesized in the following pages.

B. The Morphological Taxonomic Approach

The fundamental premise was established at the beginning of the discussion that the investigation and interpretation of prehistoric phenomena, in particular lithic artifacts, must be interpreted in light of a known system. In other words, the known provides a framework for interpreting the unknown, and one's reconstruction cannot be any better than the analog framework which is employed. Using this basic axiom as a guideline, morphological taxonomic approaches were evaluated in terms of their use of inferential procedures in the identification and classification of attributes in creating types and in terms of the systematics employed.

There are three kinds of analogs--ethnographic, projective and experimental--which provide the inferential frameworks for the identification and classification of lithic remains. As has been exemplified in Chapter II, taxonomic schemes based on these analog procedures suffer from a number of methodological difficulties. To begin with, ethnographic analogs have a very limited utility in the development of cross-cultural scientific classification systems. In most areas of the world stone materials were rapidly replaced by more durable metal items. In fact, there are no ethnographic studies in which the tool making behavior of a single social group is systematically analyzed. For the most part, the accounts which exist were made by travelers, historians and ethnographers; and record the occurrence of individual specimens and occasionally some aspects of the technological patterns used in manufacture. Such accounts may not reflect the normative tendencies of group behavior, and it is common for technological sequences to be inverted as early observers lacked the technical background to appreciate the sophistication involved in the creation of "primitive stone tools". Another point worth noting is that no matter how observant the field analyst is, he will not be able to make observations concerning the ways aborigines manipulated wave mechanics in controlling fracture unless armed with *a priori* theory. In short, this aspect of tool making is a "black box" problem. Early analysts lacked a theoretical orientation for coping with this kind of problem.

The ethnographic literature has been used extensively by prehistorians in the identification of prehistoric remains. The ethnographer's research objectives and the aims of the archaeologist are not necessarily coincident. Cultural historical studies conducted by early

ethnographers have been focused on the history of individual groups of people, and emic categories are used in the classification of material remains. The archaeologist, on the other hand, should use etic categories, as well as his concern is with cross cultural research.

Since many archaeological situations lack ethnographic analogs, analysts employ projective analogs. Specimens are simply identified and classified in accordance with the analyst's preconceptions. In other words, on the basis of their formal and in some cases technological and functional attributes, specimens are grouped into functional typological categories.

The selection of some technological attributes which are used in describing types are based on experimental analogs. However, problems are also encountered in using this form of argument, as most replicative experiments are extremely poorly controlled. In fact, none of the major experimentalists have postulated the major input variables responsible for the creation of fracture output variables to date; and in fact, some investigators have suggested material variation is not a relevant variable.

Prehistorians have capitalized on the early ethnographer's idea of naming artifacts in terms of the dominant functions which they served. Most typologies are based on this idea, which is termed the form function hypothesis. Three major versions of the form function hypothesis have been advanced to explain attributes and attribute clusters. The American school of thought here represented by the works of Rouse, Krieger, and Spaulding emphasizes particular clusters of formal attributes relating to outline; and these are thought to be indicative of how artifacts are used. On the other hand, Bordes postulates that

formal attributes reflect the technology used in the production of stone implements. Last but not least, Semenov contends that micro-morphological features, i.e., wear patterns, are indicative of how implements were used and on what substances they were employed. It should be pointed out that none of the above hypotheses have been tested or experimentally verified with the development of appropriate analogs.

The form function hypothesis is accompanied by a host of problems which tend to invalidate its utility for solving historical problems. There is a tendency to focus perception almost exclusively on outline form. Unfortunately, the descriptive system which is most commonly used within the framework of this hypothesis is couched in Euclidean geometry terms. Since many specimens have rather amorphous forms, investigators are forced to hedge continually in their descriptions by using such phrases as "triangular-like".

The different variants of the form function hypothesis share in common many of the same problems. A problem of isomorphism exists. There may be multiple ways to produce the same artifact form or attribute; but there is no way, using contemporary typological methods, to distinguish between convergent morphologies. As an example, side-notched projectile points from Mexico, Idaho and Alaska should be conceived of as belonging to the same type, as they share in common the same outline form.

Another quite similar problem which characterizes the form function hypothesis is its inability to cope with tool forms which may have had multiple uses. In other words, the hypothesis is based on the assumption that each tool has a single form and a single function. Such a view implies that tool making behavior is unidimensional in nature;

the view taken here suggests that tool making patterns can best be conceived of as reflecting multi-dimensional behavioral patterns.

Formal, technological and functional attributes which are used to describe types suffer from the same inherent problems. They are commonly based on observations, but the categories which are chosen to represent the phenomenological reality of the artifact are selected without reference to a well-conceived guiding theory. As a rule, processes which led to attribute formation are generally not considered; or, as the case of technological attributes, the conflicting conchoidal fracture and Pond-Crabtree elasticity theory are used to provide "pseudo" explanations.

Indeed, the data language which is used to describe artifacts has not developed in total isolation from events occurring in other disciplines. Jargon has been borrowed from ethnography, geology, mathematics and material science, which have accumulated through time to form a common language. Since these terms have not been developed in the light of any unified theory, they can be regarded as little more than an epistemological "hodge-podge" of contradictions.

Feibleman's theory of integrative levels (see Footnote 2, page 71) provides a set of systematic rules which can be employed in constructing analytic research models. In view of this theory, attributes should be defined in terms of the underlying mechanisms responsible for their formation, which is here postulated to be fracture mechanics.

Not only do morphological taxonomic approaches encounter difficulties at the attribute level, but also at the class level. Like attributes, classes are almost never defined. Analysts do not state

what criteria must be present or, for that matter, absent, for a specimen to be admitted to a particular class. The morphological taxonomic approach is an absolutist philosophy, as all specimens must be placed in some undefined or poorly-defined class. Variance in attributes or attribute clusters is not subjected to systematic investigation or quantification. Aberrant forms are simply termed "atypique", "non-diagnostic", or debitage.

Feibleman's theory of integrative levels also suggests that attributes and attribute clusters must be explained in light of a higher level of organization. During the course of analyses of the five typological schemes, it became apparent that different implicit concepts of culture were being employed for essentially the same purposes. Krieger's and Rouse's ideas have been influenced by Kroeber's concept of the superorganic, Spaulding is a neo-evolutionist, Bordes is a French structuralist, and Semenov accepts the Marxist point of view.

Attributes have been traditionally considered the minimal level of analysis in archaeology, and are thought to be explainable in terms of an overriding concept of culture. However, it should be pointed out that the schemes of Krieger and Rouse rely on Kroeber's superorganic, and Spaulding finds intellectual assurance in Leslie White's work. Both Kroeber and White subscribe to a closed system view of culture which holds that culture determines culture. These intellectual biases have been carried over into the ways in which types are created. Attributes are described in terms of their own geometry, not defined in terms of the underlying mechanisms which led to their creation as would be the case in an open system model. Consequently,

taxonomic types should be viewed as a form of circular non-explanatory reasoning and they have little explanatory power.

C. The Systemic Cognitive Model

In attempting to overcome some of the problems which characterize traditional taxonomic approaches, a systemic cognitive model has been developed. Rather than relying on concepts of culture which have little heuristic value in guiding research, the avenue of investigation chosen was to postulate how the individual's cognitive system operates. A fundamental premise which was kept in mind while the analytic model was created is that it had to be constructed in light of some known system which would preferably have universal application. In staying within the confines of this parameter, using my own tool making experience as a guide and appealing to the psychic unity of mankind, I have argued that the common denominator which underlies the production of all stone tools is the decision making process used by creative artists in performing their craft. Furthermore, decisions employed by craftsmen are reflected by patterns of distinctly different kinds of attributes which may be classified.

A dynamic, hierarchically-structured flow system model has been advanced (see Figure 1, Chapter III), which illustrates that there are several distinctive kinds of cognitive processes involved in tool making. I have postulated that there are at least four levels of decision-making represented in tool production which are reflected by distinctly different kinds of attributes. In order to manufacture a tool an artisan must make decisions concerning: (1) the selection of materials; (2) how to articulate the input variables of force, impactor, holding position

and materials, shape and torque; (3) microstructural or spatial concepts for setting cores up for flake removal; and last but not least, (4) macro-structural decisions concerning the ultimate form of the artifact.

One of the objectives undertaken in the study has been to determine the nature of the processes on which each of the cognitive levels is based, in attempting to gain a more comprehensive understanding of how the four distinctly different kinds of attributes are created. The first level which is concerned with materials is essentially an additive process. Materials are selected and brought together for subsequent modification. Undoubtedly, prior knowledge concerning the nature of material properties which can be used to fulfill specified goals greatly influences the selections made. This level was not investigated in depth in the present study; however, methods do exist in the disciplines of geology and rock mechanics which could be employed for gaining a better comprehension of material properties which influence decision-making. In the second level of the model it was postulated that force, impactor, holding position, material and shape can be regarded as a decision set in which input variables are combined for the purpose of inducing failure in lithic specimens.

The processes which underlie the third and fourth levels of the proposed model are thought to be considerably less complicated than the second level. Both the internal and external levels of structuring should be viewed as subtractive processes. The internal structuring level of the model is designed for the investigation of the relationship which occurs between constructional unit attributes such as the kind of platform preparation, direction of flaking, spacing between flakes, etc. ' Last but not least, external structuring is concerned

with the investigation of formal outline attributes such as length, width, and thickness, which are created through the application of internal structural rules.

In summary, the postulated cognitive model which is based on Feibleman's theory of integrative levels focuses on explaining the nature of the interaction which occurs between cognition and material. Furthermore, the model postulates that artifacts reflect four distinct kinds of attributes which are created as a consequence of fundamentally different kinds of cognitive operations which may be categorized to form decision model types.

D. Decision Model Types

Now let us turn to the question of how decision model types can be created, and the associated problems which accompany this kind of classification procedure. The analyst who attempts to formulate decision model types is a detective in that he works backward from the surviving physical remains and attempts to reconstruct the decisions employed by prehistoric craftsmen. The first level of decision-making, the selection of materials, is not a big problem as material identification procedures have been well worked out in the discipline of geology and rock mechanics which can be used to characterize the materials selected for use.

However, reconstructing second level decisions is a highly complex problem. As previously mentioned, synthetic decisions are made by the artificer in which the variables of force, impactor, holding position, material and shape are articulated for the purpose of inducing controlled failure in shaping raw material into stone implements. In other

words, a dynamic interaction occurs between cognition, behavior and material in bringing about a change in lithic materials. The question has been raised as to whether or not the synthetic decision sets which led to a particular material transformation can be reconstructed from the attributes which are represented on the surviving fracture surface. It is imperative that the analyst who attempts to reconstruct the variables which were responsible for the production of a fracture surface have a thorough comprehension of the principles which govern fracture. Chapter V has been devoted to the presentation of a general theoretical framework, relying on the Griffith Crack Theory and wave mechanics, which is useful for explaining fracture morphologies. An understanding of this nature, although extremely useful, is not the total answer. The analyst who wishes to reconstruct the input conditions, e.g., technique, responsible for a particular fracture surface on an aboriginal specimen, needs an established inferential framework in which specific input conditions are related to particular output features, thereby providing a guideline for interpreting decision sets.

Presently, no such inferential framework exists. Consequently, a dynamic loading device, the "stainless steel Indian", was used to implement 144 controlled experiments replicated five times each, in which the input conditions, "decision sets", could be related to output morphology. In Chapter VI the experimentally produced data was used to exemplify the utility of what was termed as a "particularistic" approach. The fundamental premise which underlies this approach is the idea that individual output variables may be sensitive indicators of individual decisions in a decision set. By using a controlled experimental research design, in some cases it will be possible to link particular decisions

or ranges of decisions with specific output attributes. Once this kind of linkage is established, it may be possible to reconstruct with assurance some of the input variables leading to the development of a fracture surface. However, the experiments produced in the present study should not be used to provide an inferential framework for interpreting prehistoric specimens. Many, many more experiments using other input conditions and ranges than the ones chosen for the present pilot project will be necessary before a solid inferential framework can be established for the purpose of reconstructing input decision sets.

Fortunately, the reconstruction procedures for determining the decisions in the third and fourth levels of decision model types are considerably more straightforward than for the second level. The internal structuring level is used to record relationships which occur between constructional units such as the kind of platform preparation, direction of flaking and spacing between flakes, etc. The last level of significance in decisions model types is external structuring. It is designed for recording the formal outline relationships of specimens such as length, width and thickness.

The question can, of course, be raised as to how the analyst knows what categories to select to fit within the framework of the above levels. Unfortunately, there is no cut and dried answer. One may begin with direct observation. If the analyst is an experimenter he may then attempt to recreate the specimen in light of the production organizational rules he has set forth within the framework of the decision model type.

Now that some of the problems which are involved in defining decision model types have been discussed, let us turn our attention to the procedural question of how to construct an attribute list for the purpose

of formulating decision model types which can be used in making inter- and intra-assemblage comparisons. Although it is impossible to instruct someone as to exactly what categories to place in an attribute list, there are nevertheless a few basic rules previously mentioned which should be followed.

In attempting to deal with lithic assemblages, the analyst's universe of investigation should be the lithic assemblage. Specimens may be admitted to the universe of investigation if they exhibit one or more of the following characteristics: platforms, lips, bulbs, eraillures, hackle marks, and ribs on any face.

The major unit of analysis is the attribute. However, it must be recalled that lithic artifacts exhibit at least four kinds of attributes. Consequently the attribute list should be pre-structured into four distinct units, so that the attributes which reflect different kinds of cognition processes are not mixed.

Furthermore, every category which is created within a specific cognition level must be carefully defined so that it will be absolutely clear to one's colleagues as well as future generations exactly what a particular term signifies. Furthermore, it is useful in some cases to state in what position a specimen is held in making observations, or how a measurement is taken. In some instances clarity can be gained by illustrating the attribute list. The principal advantage of the attribute list approach is that it forces the analyst to subject all specimens to exactly the same set of observations.

Decision model types are defined on consistent relationships which occur between attributes which reflect different levels of decision-making on the part of the tool maker. Once these attributes are coded in

a structured attribute list, there are a number of available statistical techniques which can be used to explicate the nature of inter-level patterning which decision model types attempt to record.

E. Utility of Decision Model Types

One of the major rationales for creating decision model types is that decision-making is the common denominator which underlies the production of stone implements in all areas of the world. The objective of creating decision model types is to explore the modal tendencies as well as the variance which typifies tool making. It seems highly probable that an interacting social group of artisans will share in common many of the same tool making decision models as a consequence of participating in the same ongoing cultural experience.

The argument has been advanced that artifact types should not simply be based on attributes derived from a single level of decision-making, but that all levels must be considered. The rationale behind this philosophy has to do with the fact that it is highly probable that when several unrelated cultural groups have similar goals in tool production, parallel decisions may occur due to the limitations that materials place on human behavior. Consequently, convergent kinds of decisions may be represented by attributes at some levels. However, it is highly unlikely that convergence in patterning would occur in all levels of decision-making unless there was direct contact between groups. Furthermore, when faced with problems of evaluating changes in diachronic sequences of material remains, it seems unlikely that change will occur synchronously in all levels at once unless there is actual population replacement. In short, the decision model approach should provide the analysts with a systematic

tool for evaluating culture change in prehistory.

In order to define prehistoric cultures in time and space, the analyst must be able to cope with a number of questions concerning the nature of culture change. It is important to be able to distinguish between migration, diffusion, *in situ* development, trade, and different aspects of a seasonal round of activities when evaluating archaeological sequences.

With recognition of the fact that artifacts manifest four distinct kinds of attributes, analysts may employ new methodological procedures for the purpose of explaining the above mentioned kinds of inter- and intra-assemblage variability. As previously noted, attribute lists should be pre-structured so that attributes from each level will be grouped together. If this is done, a special methodological procedure termed cross level analysis may be used to sort out which cultural process or combination of processes are the most likely candidates for explaining variability. As an example of this form of reasoning, decision model types utilizing a cross level analysis were employed in re-evaluating the Clovis controversy.

In trying to unravel the complex question of whether or not the sudden appearance of the Clovis tradition represents migration, diffusion and/or *in situ* development, two inter-related questions were examined in light of the hierarchically-oriented cognitive flow structure model.

Since the Clovis tradition does not have any clear-cut antecedents in the New World, the argument has been advanced that primarily a single invention--thermal alteration of lithic materials--greatly altered the cognition material relationship during the Clovis period. The limits placed on tool making behavior were greatly relaxed as an essentially new

material was created as a consequence of heat treatment. The changes which occurred in the procedural rules in the second level of the cognitive model permitted creative artists to restructure as well as expand their repertoire of procedural rules in the third and fourth levels of the model. Thus the structural organization of the proposed cognitive model is such that major reorganizational periods may occur in tool making behavior which represent major quantum jumps, and that there need not be clear-cut formal antecedents.

A cross level analysis was conducted on Clovis artifacts recovered from the Anzick, Simon, Naco and Murray Springs sites. Attention has been focused on the third (internal structuring) and fourth (external structuring) levels of the cognitive model for the purpose of evaluating if the sudden appearance of Clovis sites represents migration, diffusion, and/or *in situ* development. Two major contrasting patterns emerged as a consequence of this analysis which support the *in situ* development/diffusion position. It was found that a high degree of homogeneity exists between the Simon and Anzick specimens, and likewise the Naco and Murray Springs specimens illustrate a high degree of affinity at both the third and fourth levels. However, considerable variance exists in the procedures used to make fluted points as exemplified by the third and fourth levels of the decision model types when the northern and southern specimens are compared.

It seems likely that the widespread occurrence of Clovis fluted points does not represent the activities of a single cultural group. Rather, the diffusion of a single innovation--heat treatment--made it possible for pre-existing resident social groups to restructure and add new rules to tool making procedural grammars. The subsystem or pattern which

cross-cuts or links local groups in the Clovis tradition was the practice of hunting big game animals and common hafting methods, including the concept of fluting. With the advent of heat treatment and pressure flaking, existing weaponry systems were greatly improved.

In concluding the discussion concerning the differences between taxonomic approaches as opposed to the systemic approach advanced here, one last comment is merited. The "Culture History vs. Culture Process" debate which is in vogue in the contemporary literature is an artificial polemic as almost <u>all</u> investigators are using the morphological approach in constructing their typologies, and the attributes are not selected in light of a guiding theory or understood in light of cognition and fracture processes. If prehistorians are to deal with questions concerning culture process, a real paradigm shift must be implemented. It would be useful for analysts to break out of the closed system intellectual strait-jackets placed on them by such eminent scholars as Leslie White and Alfred Kroeber, who advocated that culture is determined by culture alone. In the future, perhaps one of the most productive routes to follow in prehistoric research will be through the experimental investigation of the interaction which takes place between cognition and materials and the formation of decision model types. Such an alternative route could hardly help but lay the groundwork for the development of a science of prehistory in which the analysts would have an opportunity to make meaningful cross-cultural comparisons.

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APPENDIX I

List of Experiments

F = Force — M = Material

I = Impactor — T = Torque

H = Holding Position — 1, 2, 3 etc. = Level

1. $F_1 I_1 H_1 M_1 T_1$
2. $F_1 I_1 H_1 M_2 T_1$
3. $F_1 I_1 H_1 M_3 T_1$
4. $F_1 I_1 H_1 M_1 T_2$
5. $F_1 I_1 H_1 M_2 T_2$
6. $F_1 I_1 H_1 M_3 T_2$
7. $F_1 I_1 H_2 M_1 T_1$
8. $F_1 I_1 H_2 M_2 T_1$
9. $F_1 I_1 H_2 M_3 T_1$
10. $F_1 I_1 H_2 M_1 T_2$
11. $F_1 I_1 H_2 M_2 T_2$
12. $F_1 I_1 H_2 M_3 T_2$
13. $F_1 I_1 H_3 M_1$
14. $F_1 I_1 H_3 M_2$
15. $F_1 I_1 H_3 M_3$
16. $F_1 I_1 H_4 M_1$
17. $F_1 I_1 H_4 M_2$
18. $F_1 I_1 H_4 M_3$
19. $F_1 I_1 H_5 M_1$
20. $F_1 I_1 H_5 M_2$
21. $F_1 I_1 H_5 M_3$
22. $F_1 I_1 H_6 M_1$
23. $F_1 I_1 H_6 M_1$
24. $F_1 I_1 H_6 M_3$
25. $F_1 I_3 H_1 M_1 T_1$
26. $F_1 I_3 H_1 M_2 T_1$
27. $F_1 I_3 H_1 M_3 T_1$
28. $F_1 I_3 H_1 M_1 T_2$
29. $F_1 I_3 H_1 M_2 T_2$
30. $F_1 I_3 H_1 M_3 T_2$
31. $F_1 I_3 H_2 M_1 T_1$
32. $F_1 I_3 H_2 M_2 T_1$
33. $F_1 I_3 H_2 M_3 T_1$
34. $F_1 I_3 H_2 M_1 T_2$
35. $F_1 I_3 H_2 M_2 T_2$
36. $F_1 I_3 H_2 M_3 T_2$
37. $F_1 I_3 H_3 M_1$
38. $F_1 I_3 H_3 M_2$
39. $F_1 I_3 H_3 M_3$
40. $F_1 I_3 H_4 M_1$
41. $F_1 I_3 H_4 M_2$
42. $F_1 I_3 H_4 M_3$
43. $F_1 I_3 H_5 M_1$
44. $F_1 I_3 H_5 M_2$
45. $F_1 I_3 H_5 M_3$
46. $F_1 I_3 H_6 M_1$
47. $F_1 I_3 H_6 M_2$
48. $F_1 I_3 H_6 M_3$
49. $F_2 I_1 H_1 M_1 T_1$
50. $F_2 I_1 H_1 M_2 T_1$
51. $F_2 I_1 H_1 M_3 T_1$

52. $F_2I_1H_1M_1T_2$

53. $F_2I_1H_1M_2T_2$

54. $F_2I_1H_1M_3T_2$

55. $F_2I_1H_2M_1T_1$

56. $F_2I_1H_2M_2T_1$

57. $F_2I_1H_2M_3T_1$

58. $F_2I_1H_2M_1T_2$

59. $F_2I_1H_2M_2T_2$

60. $F_2I_1H_2M_3T_2$

61. $F_2I_1H_3M_1$

62. $F_2I_1H_3M_2$

63. $F_2I_1H_3M_3$

64. $F_2I_1H_4M_1$

65. $F_2I_1H_4M_2$

66. $F_2I_1H_4M_3$

67. $F_2I_1H_5M_1$

68. $F_2I_1H_5M_2$

69. $F_2I_1H_5M_3$

70. $F_2I_1H_6M_1$

71. $F_2I_1H_6M_2$

72. $F_2I_1H_6M_3$

73. $F_2I_3H_1M_1T_1$

74. $F_2I_3H_1M_2T_1$

75. $F_2I_3H_1M_3T_1$

76. $F_2I_3H_1M_1T_2$

77. $F_2I_3H_1M_2T_2$

78. $F_2I_3H_1M_3T_2$

79. $F_2I_3H_2M_1T_1$

80. $F_2I_3H_2M_2T_1$

81. $F_2I_3H_2M_3T_1$

82. $F_2I_3H_2M_1T_2$

83. $F_2I_3H_2M_2T_2$

84. $F_2I_3H_2M_3T_2$

85. $F_2I_3H_3M_1$

86. $F_2I_3H_3M_2$

87. $F_2I_3H_3M_3$

88. $F_2I_3H_4M_1$

89. $F_2I_3H_4M_2$

90. $F_2I_3H_4M_3$

91. $F_2I_3H_5M_1$

92. $F_2I_3H_5M_2$

93. $F_2I_3H_5M_3$

94. $F_2I_3H_6M_1$

95. $F_2I_3H_6M_2$

96. $F_2I_3H_6M_3$

97. $F_3I_1H_1M_1T_1$

98. $F_3I_1H_1M_2T_1$

99. $F_3I_1H_1M_3T_1$

100. $F_3I_1H_1M_1T_2$

101. $F_3I_1H_1M_2T_2$

102. $F_3I_1H_1M_3T_2$

103. $F_3I_1H_2M_1T_1$

104. $F_3I_1H_2M_2T_1$

105. $F_3I_1H_2M_3T_1$

106. $F_3I_1H_2M_1T_2$

107. $F_3I_1H_2M_2T_2$

108. $F_3I_1H_2M_3T_2$

109. $F_3I_1H_3M_1$

110. $F_3I_1H_3M_2$

111. $F_3I_1H_3M_3$

112. $F_3I_1H_4M_1$

113. $F_3I_1H_4M_2$

114. $F_3I_1H_4M_3$

115. $F_3I_1H_5M_1$

116. $F_3I_1H_5M_2$

117. $F_3I_1H_5M_3$

118. $F_3I_1H_6M_1$

119. $F_3I_1H_6M_2$

120. $F_3I_1H_6M_3$

121. $F_3I_3H_1M_1T_1$

122. $F_3I_3H_1M_2T_1$

123. $F_3I_3H_1M_3T_1$

124. $F_3I_3H_1M_1T_2$

125. $F_3I_3H_1M_2T_2$

126. $F_3I_3H_1M_3T_2$

127. $F_3I_3H_2M_1T_1$

128. $F_3I_3H_2M_2T_1$

129. $F_3I_3H_2M_3T_1$

130. $F_3I_3H_2M_1T_2$

131. $F_3I_3H_2M_2T_2$

132. $F_3I_3H_2M_3T_2$

133. $F_3I_3H_3M_1$

134. $F_3I_3H_3M_2$

135. $F_3I_3H_3M_3$

136. $F_3I_3H_4M_1$

137. $F_3I_3H_4M_2$

138. $F_3I_3H_4M_3$

139. $F_3I_3H_5M_1$

140. $F_3I_3H_5M_2$

141. $F_3I_3H_5M_3$

142. $F_3I_3H_6M_1$

143. $F_3I_3H_6M_2$

144. $F_3I_3H_6M_3$

APPENDIX II

VARIABLE CODE

I. A. Control Information

Column Number	
1 - 3	Experiment number
4	Replification number; 1 - 5
5	Card number; 1 - 2

II. B. Input Variables

	Variable Number	Column Number on I.B.M. Card	
	1	6	Force: 1. 10 cm. drop 2. 20 cm. drop 3. 30 cm. drop
	2	7	Impactor: 1. antler 2. hard hammer impactor
	3	8	Holding positions: 1 - 6 (refer Fig. 2, p. 85)
	4	9	Materials: 1. glass 2. obsidian 3. quartzite
	5	10	Torque: 0. no torque 1. 40 inch pounds 2. 80 inch pounds
III.	6	11	Bottom support fracture: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
7	12	Corner support fracture: 0. absent 1. present
8	13	Fracture directly under impact: 0. absent 1. present
9	15	Face of ring crack occurrence: 1. X 2. Y 3. Z 4. B
10	16	Primary ring crack circumference: 0. absent 1. 0 - ¼ circle 2. ¼ - ½ circle 3. ½ - 3/4 circle 4. 3/4 - complete circle 5. opposing area
11	17	Secondary ring crack circumference: 0. absent 1. 0 - ¼ 2. ¼ - ½ 3. ½ - 3/4 4. 3/4 - complete 5. opposing area
12	20	Primary ring crack diameter: 0. missing 1. 0 - 1.0 mm. 2. 1.0 - 2.0 mm. 3. 2.0 - 3.0 mm. 4. 3.0 - 4.0 mm. 5. 4.0 - 5.0 mm. 6. 5.0 - 6.0 mm. 7. 6.0 - 7.0 mm 8. 7.0 - 8.0 mm. 9. more than 8.0 mm.
13	21	Primary incipient half cone: 0. absent 1. present
14	22	Primary incipient whole cone: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
15	24	Primary whole cone: 0. absent 1. present and complete 2. split by radial fracturing
16	25	Secondary incipient half cone: 0. absent 1. present
17	26	Secondary incipient whole cone: 0. absent 1. present
18	27	Secondary half cone: 0. absent 1. present and complete 2. present split in half
19	28	Secondary whole cone: 0. absent 1. present
20	29	Lips: 0. absent 1. present
21	30	Primary incipient and partially complete conoid fracture: 0. absent 1. present
22	31	Primary flake bulbs: 0. not present 1. poorly defined 2. moderately defined 3. well defined
23	32	Primary flake hackle marks adjacent to point of impact: 0. absent 1. present
24	33	Primary flake hackle marks on lateral edge of ribs: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
25	34	Primary flake hackle marks on ribs: 0. absent 1. present
26	35	Primary flake hackle marks at distal end: 0. absent 1. present
27	36	Primary flake ribs concentric to point of origin: 0. not present 1. poorly defined 2. moderately defined 3. well defined
28	37	Primary flake ribs semi-circular to point of origin: 0. not present 1. poorly defined 2. moderately defined 3. well defined
29	38	Primary flake eraillures: 0. absent 1. present
30	39	Primary flake hinge at distal end: 0. absent 1. present
31	40	Primary flake step at distal end: 0. absent 1. present
32	41	Primary flake feathers out at distal end: 0. absent 1. present
33	42	Primary flake reverse hinge at distal end: 0. absent 1. present
34	43	Primary flake jagged and irregular at distal end: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
35	44	Primary flake length: 0. absent 1. 0 - 0.5 cm. 2. 0.5 - 1.0 cm. 3. 1.0 - 1.5 cm. 4. 1.5 - 2.0 cm. 5. 2.0 - 2.5 cm. 6. 2.5 - 3.0 cm. 7. 3.0 - 3.5 cm. 8. 3.5 - 4.0 cm. 9. 4.0+ cm.
36	46	Primary flake width: 0. no flake 1. 0.0 - 0.5 cm. 2. 0.5 - 1.0 cm. 3. 1.0 - 1.5 cm. 4. 1.5 - 2.0 cm. 5. 2.0 - 2.5 cm. 6. 2.5 - 3.0 cm. 7. 3.0 - 3.5 cm. 8. 3.5 - 4.0 cm. 9. 4.0 - 4.5+ cm.
37	47	Blank
38	48	Cone segments: 0. absent 1. present
39	49	Conoid reverse fracture: 0. absent 1. 1 fracture branch 2. 2 branches 3. 3 branches 4. 4. branches 5. 5 branches 6. 6 branches 7. 7 branches 8. 8 branches 9. 9 branches or more
40	50	Primary flake shape: 0. absent 1. symmetrical 2. asymmetrical

Variable Number	Column Number on I.B.M. Card	
41	52	Secondary flake length: 0. not present 1. 0.0 - 0.5 cm. 2. 0.5 - 1.0 cm. 3. 1.0 - 1.5 cm. 4. 1.5 - 2.0 cm. 5. 2.0 - 2.5 cm. 6. 2.5 - 3.0 cm. 7. 3.0 - 3.5 cm. 8. 3.5 - 4.0 cm. 9. 4.0+ cm.
42	53	Secondary flake width: 0. absent 1. 0.0 - 0.5 cm. 2. 0.5 - 1.0 cm. 3. 1.0 - 1.5 cm. 4. 1.5 - 2.0 cm. 5. 2.0 - 2.5 cm. 6. 2.5 - 3.0 cm. 7. 3.0 - 3.5 cm. 8. 3.5 - 4.0 cm. 9. 4.0+ cm.
43	54	Secondary flake bulb: 0. absent 1. poorly defined 2. moderately defined 3. well defined
44	55	Secondary flake hackle marks adjacent to impact area: 0. absent 1. present
45	56	Secondary flake hackle marks on lateral edges: 0. absent 1. present
46	57	Secondary flake hackle marks on ribs: 0. absent 1. present
47	58	Secondary flake hackle marks on distal end: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
48	59	Secondary flake ribs concentric to point of origin: 0. absent 1. present
49	60	Secondary flake ribs semi-circular to point of origin: 0. absent 1. poorly defined 2. moderately defined 3. well defined
50	61	Secondary flake eraillures: 0. absent 1. present
51	62	Secondary flake hinge at distal end: 0. absent 1. present
52	63	Secondary flake step at distal end: 0. absent 1. present
53	64	Secondary flake feathers out at distal end: 0. absent 1. present
54	65	Secondary flake reverse hinge at distal end: 0. absent 1. present
55	66	Secondary flake jagged and irregular at the distal end: 0. absent 1. present
56	67	Secondary flake shape: 0. absent 1. symmetrical 2. asymmetrical
57	68	Incipient flakes: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
58	69	Incipient flake face: 0. absent 1. X 2. Y 3. Z 4. B
59	70	Beveled face with microflaking along but outside of negative scar: 0. absent 1. present
60	73	Internal failure at a flaw or bedding plane: 0. absent 1. present
61	74	Secondary flake lip: 0. absent 1. present
62	75	Negative cone segments: 0. absent 1. present
63	77	Primary flake--outré passé: 0. absent 1. present
64	78	Secondary flake--outré passé or end shock: 0. absent 1. present
65	79	Secondary, incipient and partially complete conoid fracture: 0. absent 1. present
66	80	Secondary ring crack diameter: 0. absent 1. 0 - ¼ circle 2. ¼ - ½ circle 3. ½ - 3/4 circle 4. 3/4 complete circle 5. opposing area

I. B. Card 1

1 - 3	Experiment number
4	Replication number
5.	Card number

II. B. Continuation of Data Variables

Variable Number	Column Number on I.B.M. Card	
67	6	Frequency distribution of completed radial cracks on edge number 1: 0. absent 1. 1 crack 2. 2 cracks 3. 3 cracks 4. 4 cracks 5. 5 cracks 6. 6 cracks 7. 7 cracks 8. 8 cracks 9. 9 or more cracks
68	7	Frequency distribution of completed radial cracks on edge number 2: scaled the same as column 6.
69	8	Frequency distribution of completed radial cracks on edge number 3: scaled the same as column 6.
70	9	Frequency distribution of completed radial cracks on edge number 4: scaled the same as column 6.
71	10	Pressure flakes induced by vise: 0. absent 1. present
72	11	Fracture by flexing or bending--present under impact: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
73	12	Fracture by flexure or bending--present elsewhere: 0. absent 1. present
74	13	Fracture by flexure or bending--radial fracture initiated from one point on bottom of compressed cone: 0. absent 1. present
75	14	Fracture by flexure or bending--radial fracture initiated from bottom edge of half cone: 0. absent 1. present
76	15	Primary negative flake scar--microflaking: 0. absent 1. present
77	16	Primary negative flake scar--crushing: 0. absent 1. present
78	17	Primary flake platform alterations--pitting: 0. absent 1. present
79	18	Primary flake platform alterations--scratching: 0. absent 1. present
80	19	Primary flake platform alterations--crushing: 0. absent 1. present
81	20	Primary flake platform alterations: microcracks: 0. absent 1. present
82	21	Primary flake platform alterations--microflaking: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
83	22	Primary half cone: 0. absent 1. present and complete 2. present and split in half 3. present and split into 3 pieces 4. present and split into 4 pieces 5. present and split into more than 4 pieces.
84	23	Primary half cone--incomplete: 0. absent 1. present
85	24	Primary face of flake long axis--X: 0. absent 1. present
86.	25	Primary face of flake long axis--Y: 0. absent 1. present
87	26	Primary face of flake long axis--Z: 0. absent 1. present
88	27	Primary face of flake long axis--B: 0. absent 1. present
89	28	Primary face of flake long axis--negative X: 0. absent 1. present
	29	Blank
90	30	Secondary flake: face of long axis--X: 0. absent 1. present
91	31	Secondary flake: face of long axis--Y: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
92	32	Secondary flake: face of long axis--Z: 0. absent 1. present
93	33	Secondary flake: face of long axis--B: 0. absent 1. present
94	34	Secondary flake: face of long axis--negative X: 0. absent 1. present
95	35	Secondary flake platform alterations--pitting: 0. absent 1. present
96	36	Secondary flake platform alterations--scratching: 0. absent 1. present
97	37	Secondary flake platform alterations--crushing: 0. absent 1. present
98	38	Secondary flake platform alterations--microcracks: 0. absent 1. present
99	39	Secondary flake platform alterations--microflaking: 0. absent 1. present
100	40	Secondary flake negative scar alterations--microflaking: 0. present 1. present
101	41	Secondary flake negative scar alterations--crushing: 0. absent 1. present

Variable Number	Column Number on I.B.M. Card	
102	42	Face of negative cone segments--X face: 0. absent 1. present
103	43	Face of negative cone segments--both X faces: 0. absent 1. present

TABLE 1 A: MEANS, MODES AND RANGES OF OUTPUT VARIABLES
Experiment number 1

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 2

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 3

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 4

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)

Experiment number 5

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 6

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 7

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 8

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 9

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 10

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 11

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 12

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 13

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 14

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 15

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 16

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 17

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 18

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 19

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 20

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	2.4	2	2	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.4	0	0	2
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.4	0	0	2
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.2	0	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 21

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.2	0	0	1
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.2	0	0	1
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 22

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	1.2	1	1	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.6	1	0	1	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.4	0	0	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	1.0	0	0	5	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 23

Var	Mean	Mode	Min	Max
1	1.0	1	1	1
2	1.0	1	1	1
3	6.0	6	6	6
4	2.0	2	2	2
5	0.0	0	0	0
6	0.0	0	0	0
7	0.8	1	0	1
8	0.2	0	0	1
9	0.0	0	0	0
10	0.0	0	0	0
11	0.0	0	0	0
12	0.0	0	0	0
13	0.0	0	0	0
14	0.0	0	0	0
15	0.0	0	0	0
16	0.0	0	0	0
17	0.0	0	0	0
18	0.0	0	0	0
19	0.0	0	0	0
20	0.0	0	0	0
21	0.0	0	0	0
22	0.0	0	0	0
23	0.0	0	0	0
24	0.0	0	0	0
25	0.0	0	0	0
26	0.0	0	0	0
27	0.0	0	0	0
28	0.0	0	0	0
29	0.0	0	0	0
30	0.0	0	0	0
31	0.0	0	0	0
32	0.0	0	0	0
33	0.0	0	0	0
34	0.0	0	0	0
35	0.0	0	0	0
36	0.0	0	0	0
37	0.0	0	0	0
38	0.0	0	0	0
39	0.4	0	0	2
40	0.0	0	0	0
41	0.0	0	0	0
42	0.0	0	0	0
43	0.0	0	0	0
44	0.0	0	0	0
45	0.0	0	0	0
46	0.0	0	0	0
47	0.0	0	0	0
48	0.0	0	0	0
49	0.0	0	0	0
50	0.0	0	0	0
51	0.0	0	0	0
52	0.0	0	0	0
53	0.0	0	0	0
54	0.0	0	0	0
55	0.0	0	0	0
56	0.0	0	0	0
57	0.0	0	0	0
58	0.0	0	0	0
59	0.0	0	0	0
60	0.0	0	0	0
61	0.0	0	0	0
62	0.0	0	0	0
63	0.0	0	0	0
64	0.0	0	0	0
65	0.0	0	0	0
66	0.0	0	0	0
67	0.0	0	0	0
68	0.0	0	0	0
69	0.0	0	0	0
70	0.0	0	0	0
71	0.0	0	0	0
72	0.0	0	0	0
73	0.0	0	0	0
74	0.0	0	0	0
75	0.0	0	0	0
76	0.0	0	0	0
77	0.0	0	0	0
78	0.0	0	0	0
79	0.0	0	0	0
80	0.0	0	0	0
81	0.0	0	0	0
82	0.0	0	0	0
83	0.2	0	0	1
84	0.0	0	0	0
85	0.0	0	0	0
86	0.0	0	0	0
87	0.0	0	0	0
88	0.0	0	0	0
89	0.0	0	0	0
90	0.0	0	0	0
91	0.0	0	0	0
92	0.0	0	0	0
93	0.0	0	0	0
94	0.0	0	0	0
95	0.0	0	0	0
96	0.0	0	0	0
97	0.0	0	0	0
98	0.0	0	0	0
99	0.0	0	0	0
100	0.0	0	0	0
101	0.0	0	0	0
102	0.0	0	0	0
103	0.0	0	0	0

TABLE 1 A (cont'd)
Experiment number 24

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.6	1	0	1
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.4	0	0	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.6	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.4	0	0	1
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 25

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 26

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 27

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 28

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 29

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 30

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 31

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 32

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.6	1	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	1.6	2	0	2
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.2	0	0	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.4	0	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.4	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	1.0	1	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.4	0	0	1
25	0.0	0	0	0	77	0.2	0	0	1
26	0.2	0	0	1	78	0.0	0	0	0
27	0.6	1	0	1	79	0.0	0	0	0
28	0.0	0	0	0	80	0.2	0	0	1
29	0.4	0	0	1	81	0.0	0	0	0
30	0.2	0	0	1	82	0.2	0	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.8	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.8	3	1	4	87	0.0	0	0	0
36	4.8	5	2	8	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.8	1	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.6	2	1	2	92	0.0	0	0	0
41	3.0	3	0	5	93	0.0	0	0	0
42	4.6	0	0	9	94	0.0	0	0	0
43	0.8	0	0	2	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.4	0	0	1	98	0.0	0	0	0
47	0.0	0	0	0	99	0.2	0	0	1
48	1.0	1	0	2	100	0.8	1	0	1
49	0.0	0	0	0	101	0.8	1	0	1
50	0.2	0	0	1	102	0.0	0	0	0
51	0.2	0	0	1	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 33

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.2	0	0	1
6	0.0	0	0	0	58	0.2	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.6	1	0	1	60	0.4	0	0	1
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.6	1	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.6	1	0	1	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.6	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.2	0	0	1	83	0.0	0	0	0
32	0.4	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.6	1	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	1.2	2	0	2	87	0.0	0	0	0
36	2.2	0	0	4	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	1.0	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 34

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.4	0	0	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.8	1	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	1.4	0	0	3	74	0.0	0	0	0
23	0.2	0	0	1	75	0.0	0	0	0
24	0.0	0	0	0	76	0.6	1	0	1
25	0.2	0	0	1	77	0.8	1	0	1
26	0.2	0	0	1	78	0.0	0	0	0
27	0.8	0	0	2	79	0.0	0	0	0
28	0.0	0	0	0	80	0.2	0	0	1
29	0.2	0	0	1	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.8	2	1	5	87	0.0	0	0	0
36	6.2	1	1	9	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	2.0	2	2	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 35

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.4	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.8	2	1	2	56	1.2	2	0	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.8	1	0	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.2	0	0	1	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.8	1	0	1
25	0.2	0	0	1	77	0.8	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.6	0	0	2	79	0.0	0	0	0
28	0.8	0	0	2	80	0.6	1	0	1
29	0.0	0	0	0	81	0.6	1	0	1
30	0.0	0	0	0	82	0.6	1	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.6	2	1	5	87	0.0	0	0	0
36	3.4	4	2	4	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.6	1	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.2	1	0	2	92	0.0	0	0	0
41	2.2	0	0	5	93	0.0	0	0	0
42	2.8	0	0	9	94	0.0	0	0	0
43	0.2	0	0	1	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.4	0	0	1
46	0.4	0	0	1	98	0.4	0	0	1
47	0.0	0	0	0	99	0.4	0	0	1
48	0.8	0	0	2	100	0.4	0	0	1
49	0.6	0	0	2	101	0.6	1	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 36

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.2	0	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.4	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.4	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.4	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.4	0	0	1	87	0.0	0	0	0
36	1.0	0	0	3	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.6	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 37

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.6	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	2.4	3	0	3	61	0.0	0	0	0
10	1.4	1	0	4	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.4	0	0	2	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 38

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.2	0	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	2.4	3	0	3	61	0.0	0	0	0
10	0.8	1	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 39

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.4	0	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	1.2	0	0	3	61	0.0	0	0	0
10	0.6	0	0	2	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	1.2	0	0	6	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 40

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.2	0	0	1
6	0.2	0	0	1	58	0.2	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.2	0	0	1
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.6	1	0	1	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.4	0	0	1
25	0.0	0	0	0	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.4	0	0	1
29	0.0	0	0	0	81	0.4	0	0	1
30	0.0	0	0	0	82	0.4	0	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.4	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.4	0	0	1	87	0.0	0	0	0
36	0.4	0	0	1	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.4	0	0	1	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.8	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.2	0	0	1
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 41

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	1.8	2	1	2	56	0.4	0	0	2
5	0.0	0	0	0	57	0.6	1	0	1
6	0.2	0	0	1	58	0.6	1	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.4	0	0	2	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	1.2	0	0	6	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.8	1	0	1
25	0.0	0	0	0	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.8	0	0	2	80	0.4	0	0	1
29	0.0	0	0	0	81	0.4	0	0	1
30	0.0	0	0	0	82	0.6	1	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.4	0	0	1
34	0.2	0	0	1	86	0.0	0	0	0
35	1.4	0	0	5	87	0.0	0	0	0
36	2.0	0	0	7	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 42

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	3.0	3	3	3	56	0.4	0	0	2
5	0.0	0	0	0	57	0.4	0	0	1
6	0.2	0	0	1	58	0.4	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.6	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.6	1	0	1
29	0.0	0	0	0	81	0.6	1	0	1
30	0.0	0	0	0	82	0.2	0	0	1
31	0.2	0	0	1	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.6	1	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.6	1	0	1	87	0.0	0	0	0
36	1.2	2	0	2	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.0	0	0	2	92	0.0	0	0	0
41	0.4	0	0	2	93	0.0	0	0	0
42	0.8	0	0	4	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.2	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)

Experiment number 43

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.8	0	0	2
16	0.0	0	0	0	68	2.8	0	0	5
17	0.0	0	0	0	69	1.0	1	0	2
18	0.0	0	0	0	70	2.8	0	0	5
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 44

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.4	0	0	1	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.8	1	0	1
16	0.0	0	0	0	68	1.8	1	1	3
17	0.0	0	0	0	69	1.0	1	0	2
18	0.0	0	0	0	70	2.2	2	1	3
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.2	0	0	1
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 45

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.4	0	0	1	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.2	0	0	1
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.4	0	0	1
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 46

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.8	1	0	1
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	1.0	1	1	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	2.2	1	1	4	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 47

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.4	0	0	2	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.2	0	0	1	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.2	0	0	1
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	1.0	1	1	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.4	0	0	1	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 48

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	1.0	1	1	1	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	0.2	0	0	1	60	0.0	0	0	0
9	0.2	0	0	1	61	0.0	0	0	0
10	0.4	0	0	2	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.6	1	0	1
18	0.0	0	0	0	70	0.4	0	0	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.4	0	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.6	1	0	1
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.2	0	0	1
29	0.0	0	0	0	81	0.4	0	0	1
30	0.0	0	0	0	82	0.2	0	0	1
31	0.0	0	0	0	83	0.2	0	0	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 49

Var	Mean	Mode	Min	Max
1	2.0	2	2	2
2	1.0	1	1	1
3	1.0	1	1	1
4	1.0	1	1	1
5	1.0	1	1	1
6	0.0	0	0	0
7	0.0	0	0	0
8	0.0	0	0	0
9	0.0	0	0	0
10	0.0	0	0	0
11	0.0	0	0	0
12	0.0	0	0	0
13	0.0	0	0	0
14	0.0	0	0	0
15	0.0	0	0	0
16	0.0	0	0	0
17	0.0	0	0	0
18	0.0	0	0	0
19	0.0	0	0	0
20	0.0	0	0	0
21	0.0	0	0	0
22	0.0	0	0	0
23	0.0	0	0	0
24	0.0	0	0	0
25	0.0	0	0	0
26	0.0	0	0	0
27	0.0	0	0	0
28	0.0	0	0	0
29	0.0	0	0	0
30	0.0	0	0	0
31	0.0	0	0	0
32	0.0	0	0	0
33	0.0	0	0	0
34	0.0	0	0	0
35	0.0	0	0	0
36	0.0	0	0	0
37	0.0	0	0	0
38	0.0	0	0	0
39	0.0	0	0	0
40	0.0	0	0	0
41	0.0	0	0	0
42	0.0	0	0	0
43	0.0	0	0	0
44	0.0	0	0	0
45	0.0	0	0	0
46	0.0	0	0	0
47	0.0	0	0	0
48	0.0	0	0	0
49	0.0	0	0	0
50	0.0	0	0	0
51	0.0	0	0	0
52	0.0	0	0	0

Var	Mean	Mode	Min	Max
53	0.0	0	0	0
54	0.0	0	0	0
55	0.0	0	0	0
56	0.0	0	0	0
57	0.0	0	0	0
58	0.0	0	0	0
59	0.0	0	0	0
60	0.0	0	0	0
61	0.0	0	0	0
62	0.0	0	0	0
63	0.0	0	0	0
64	0.0	0	0	0
65	0.0	0	0	0
66	0.0	0	0	0
67	0.0	0	0	0
68	0.0	0	0	0
69	0.0	0	0	0
70	0.0	0	0	0
71	0.0	0	0	0
72	0.0	0	0	0
73	0.0	0	0	0
74	0.0	0	0	0
75	0.0	0	0	0
76	0.0	0	0	0
77	0.0	0	0	0
78	0.0	0	0	0
79	0.0	0	0	0
80	0.0	0	0	0
81	0.0	0	0	0
82	0.0	0	0	0
83	0.0	0	0	0
84	0.0	0	0	0
85	0.0	0	0	0
86	0.0	0	0	0
87	0.0	0	0	0
88	0.0	0	0	0
89	0.0	0	0	0
90	0.0	0	0	0
91	0.0	0	0	0
92	0.0	0	0	0
93	0.0	0	0	0
94	0.0	0	0	0
95	0.0	0	0	0
96	0.0	0	0	0
97	0.0	0	0	0
98	0.0	0	0	0
99	0.0	0	0	0
100	0.0	0	0	0
101	0.0	0	0	0
102	0.0	0	0	0
103	0.0	0	0	0

TABLE 1 A (cont'd)
Experiment number 50

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 51

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 52

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 53

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 54

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 55

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.2	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.2	0	0	1	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.2	0	0	1	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.2	0	0	1	87	0.0	0	0	0
36	0.8	0	0	4	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 56

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 57

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.2	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.4	0	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.6	0	0	3	87	0.0	0	0	0
36	0.8	0	0	4	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 58

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.2	0	0	1
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.4	0	0	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.2	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.2	0	0	1
29	0.0	0	0	0	81	0.2	0	0	1
30	0.0	0	0	0	82	0.2	0	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.2	0	0	1	87	0.0	0	0	0
36	0.6	0	0	3	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	0.6	0	0	3	93	0.0	0	0	0
42	1.0	0	0	5	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.2	0	0	1
47	0.0	0	0	0	99	0.2	0	0	1
48	0.0	0	0	0	100	0.2	0	0	1
49	0.2	0	0	1	101	0.2	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 59

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.6	1	0	1
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	1.6	2	1	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.8	1	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.8	1	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	1.2	1	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.2	0	0	1	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.2	0	0	1	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	3.4	4	2	4	87	0.0	0	0	0
36	3.6	3	2	6	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	1.0	1	1	1
39	0.2	0	0	1	91	0.0	0	0	0
40	2.0	2	2	2	92	0.0	0	0	0
41	4.2	4	3	5	93	0.0	0	0	0
42	7.6	9	3	9	94	0.0	0	0	0
43	1.6	2	0	3	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.2	0	0	1	98	0.0	0	0	0
47	0.6	1	0	1	99	0.0	0	0	0
48	0.0	0	0	0	100	0.4	0	0	1
49	0.6	1	0	1	101	0.2	0	0	1
50	0.2	0	0	1	102	0.0	0	0	0
51	0.2	0	0	1	103	0.0	0	0	0
52	0.2	0	0	1					

TABLE 1 A (cont'd)
Experiment number 60

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	1.0	1	1	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	2.6	3	2	3	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	3.0	3	2	4	87	0.0	0	0	0
36	5.2	5	4	6	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	1.8	2	1	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 61

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.4	0	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 62

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 63

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 64

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.6	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.2	0	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.6	1	0	1	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.2	0	0	1	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.4	0	0	2	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.2	0	0	1	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.8	0	0	4	87	0.0	0	0	0
36	1.4	0	0	7	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.2	0	0	1	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 65

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.6	1	0	1
6	0.8	1	0	1	58	0.6	1	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.6	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.4	0	0	2	80	0.0	0	0	0
29	0.0	0	0	0	81	0.2	0	0	1
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	1.0	0	0	5	87	0.0	0	0	0
36	0.8	0	0	4	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 66

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	1.4	2	0	2	62	0.0	0	0	0
11	0.4	0	0	2	63	0.0	0	0	0
12	4.8	0	0	9	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 67

Var	Mean	Mode	Min	Max
1	2.0	2	2	2
2	1.0	1	1	1
3	5.0	5	5	5
4	1.0	1	1	1
5	0.0	0	0	0
6	0.0	0	0	0
7	0.0	0	0	0
8	0.0	0	0	0
9	0.0	0	0	0
10	0.0	0	0	0
11	0.0	0	0	0
12	0.0	0	0	0
13	0.0	0	0	0
14	0.0	0	0	0
15	0.0	0	0	0
16	0.0	0	0	0
17	0.0	0	0	0
18	0.0	0	0	0
19	0.0	0	0	0
20	0.0	0	0	0
21	0.0	0	0	0
22	0.0	0	0	0
23	0.0	0	0	0
24	0.0	0	0	0
25	0.0	0	0	0
26	0.0	0	0	0
27	0.0	0	0	0
28	0.0	0	0	0
29	0.0	0	0	0
30	0.0	0	0	0
31	0.0	0	0	0
32	0.0	0	0	0
33	0.0	0	0	0
34	0.0	0	0	0
35	0.0	0	0	0
36	0.0	0	0	0
37	0.0	0	0	0
38	0.0	0	0	0
39	0.0	0	0	0
40	0.0	0	0	0
41	0.0	0	0	0
42	0.0	0	0	0
43	0.0	0	0	0
44	0.0	0	0	0
45	0.0	0	0	0
46	0.0	0	0	0
47	0.0	0	0	0
48	0.0	0	0	0
49	0.0	0	0	0
50	0.0	0	0	0
51	0.0	0	0	0
52	0.0	0	0	0
53	0.0	0	0	0
54	0.0	0	0	0
55	0.0	0	0	0
56	0.0	0	0	0
57	0.0	0	0	0
58	0.0	0	0	0
59	0.0	0	0	0
60	0.0	0	0	0
61	0.0	0	0	0
62	0.0	0	0	0
63	0.0	0	0	0
64	0.0	0	0	0
65	0.0	0	0	0
66	0.0	0	0	0
67	0.2	0	0	1
68	0.4	0	0	2
69	0.4	0	0	2
70	0.4	0	0	2
71	0.0	0	0	0
72	0.2	0	0	1
73	0.0	0	0	0
74	0.0	0	0	0
75	0.0	0	0	0
76	0.0	0	0	0
77	0.0	0	0	0
78	0.0	0	0	0
79	0.0	0	0	0
80	0.0	0	0	0
81	0.0	0	0	0
82	0.0	0	0	0
83	0.0	0	0	0
84	0.0	0	0	0
85	0.0	0	0	0
86	0.0	0	0	0
87	0.0	0	0	0
88	0.0	0	0	0
89	0.0	0	0	0
90	0.0	0	0	0
91	0.0	0	0	0
92	0.0	0	0	0
93	0.0	0	0	0
94	0.0	0	0	0
95	0.0	0	0	0
96	0.0	0	0	0
97	0.0	0	0	0
98	0.0	0	0	0
99	0.0	0	0	0
100	0.0	0	0	0
101	0.0	0	0	0
102	0.0	0	0	0
103	0.0	0	0	0

TABLE 1 A (cont'd)
Experiment number 68

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.8	1	0	1
16	0.0	0	0	0	68	3.0	3	2	4
17	0.0	0	0	0	69	1.4	1	1	2
18	0.0	0	0	0	70	2.2	1	1	4
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.2	0	0	1
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.2	0	0	1
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 69

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.4	0	0	1
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	1.2	1	1	2
17	0.0	0	0	0	69	0.4	0	0	1
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 70

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	1.0	1	1	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	3.0	3	3	3	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 71

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	2.4	0	0	6	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	1.0	1	1	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	1.6	2	0	3	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 72

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.4	0	0	1	59	0.0	0	0	0
8	0.2	0	0	1	60	0.2	0	0	1
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	1.0	1	0	2
17	0.0	0	0	0	69	0.2	0	0	1
18	0.0	0	0	0	70	0.6	1	0	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.2	0	0	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 73

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 74

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.8	1	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 75

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.8	1	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 76

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.4	0	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 77

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	2.4	1	1	4	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	1.8	3	0	3	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 78

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	1.2	0	0	4	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.4	0	0	2	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 79

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.2	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.4	0	0	2
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.2	0	0	1
8	0.6	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.2	0	0	1
10	0.4	0	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.4	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	1.2	2	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.6	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.4	0	0	1	80	0.0	0	0	0
29	0.0	0	0	0	81	0.2	0	0	1
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.6	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.6	1	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	1.6	0	0	3	87	0.0	0	0	0
36	3.0	0	0	7	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.2	2	0	2	92	0.0	0	0	0
41	0.8	0	0	4	93	0.0	0	0	0
42	1.4	0	0	7	94	0.0	0	0	0
43	0.4	0	0	2	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.4	0	0	2	100	0.2	0	0	1
49	0.4	0	0	2	101	0.2	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 80

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	1.0	1	1	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	1.8	2	1	2
5	1.0	1	1	1	57	0.2	0	0	1
6	0.0	0	0	0	58	0.2	0	0	1
7	0.0	0	0	0	59	1.0	1	1	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.4	0	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.4	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.8	0	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.2	0	0	1	80	0.0	0	0	0
29	0.2	0	0	1	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.8	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.8	1	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.0	2	0	3	87	0.0	0	0	0
36	3.4	4	0	6	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	1.0	1	1	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.6	2	0	2	92	0.0	0	0	0
41	3.2	3	3	4	93	0.0	0	0	0
42	6.8	8	3	9	94	0.0	0	0	0
43	1.4	0	0	3	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	1.0	1	1	1
49	1.2	1	1	2	101	0.8	1	0	1
50	0.2	0	0	1	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 81

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.2	0	0	1	60	0.2	0	0	1
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.4	0	0	2	87	0.0	0	0	0
36	0.4	0	0	2	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.2	0	0	1	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 82

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.4	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.8	0	0	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.2	0	0	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.2	0	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.8	1	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	1.4	0	0	3	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.8	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.8	1	0	1	80	0.2	0	0	1
29	0.2	0	0	1	81	0.2	0	0	1
30	0.2	0	0	1	82	0.2	0	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.8	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	3.6	4	2	4	87	0.0	0	0	0
36	6.2	6	4	8	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.4	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	2.0	2	2	2	92	0.0	0	0	0
41	2.4	0	0	6	93	0.0	0	0	0
42	2.4	0	0	8	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.4	0	0	1
46	0.2	0	0	1	98	0.2	0	0	1
47	0.0	0	0	0	99	0.2	0	0	1
48	0.0	0	0	0	100	0.4	0	0	1
49	0.6	0	0	2	101	0.2	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 83

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.6	1	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	1.0	0	0	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.4	0	0	1
10	0.2	0	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.8	0	0	3	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.2	0	0	1	76	0.0	0	0	0
25	0.0	0	0	0	77	0.2	0	0	1
26	0.2	0	0	1	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.4	0	0	1	80	0.0	0	0	0
29	0.4	0	0	1	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.8	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.8	1	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.6	2	0	6	87	0.0	0	0	0
36	3.4	5	0	5	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.6	1	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.6	2	0	2	92	0.0	0	0	0
41	2.0	0	0	4	93	0.0	0	0	0
42	4.8	0	0	9	94	0.0	0	0	0
43	1.2	0	0	3	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.2	0	0	1	98	0.0	0	0	0
47	0.2	0	0	1	99	0.0	0	0	0
48	0.0	0	0	0	100	0.2	0	0	1
49	0.8	0	0	3	101	0.4	0	0	1
50	0.2	0	0	1	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 84

Var	Mean	Mode	Min	Max
1	2.0	2	2	2
2	3.0	3	3	3
3	2.0	2	2	2
4	3.0	3	3	3
5	2.0	2	2	2
6	0.0	0	0	0
7	0.0	0	0	0
8	1.0	1	1	1
9	0.0	0	0	0
10	0.0	0	0	0
11	0.0	0	0	0
12	0.0	0	0	0
13	0.0	0	0	0
14	0.0	0	0	0
15	0.0	0	0	0
16	0.0	0	0	0
17	0.0	0	0	0
18	0.0	0	0	0
19	0.0	0	0	0
20	0.4	0	0	1
21	0.0	0	0	0
22	1.0	0	0	2
23	0.0	0	0	0
24	0.0	0	0	0
25	0.0	0	0	0
26	0.0	0	0	0
27	0.0	0	0	0
28	0.0	0	0	0
29	0.0	0	0	0
30	0.0	0	0	0
31	0.2	0	0	1
32	0.8	1	0	1
33	0.0	0	0	0
34	0.0	0	0	0
35	1.6	2	1	2
36	3.2	3	3	4
37	0.0	0	0	0
38	0.0	0	0	0
39	0.0	0	0	0
40	2.0	2	2	2
41	0.0	0	0	0
42	0.0	0	0	0
43	0.0	0	0	0
44	0.0	0	0	0
45	0.0	0	0	0
46	0.0	0	0	0
47	0.0	0	0	0
48	0.0	0	0	0
49	0.0	0	0	0
50	0.0	0	0	0
51	0.0	0	0	0
52	0.0	0	0	0
53	0.0	0	0	0
54	0.0	0	0	0
55	0.0	0	0	0
56	0.0	0	0	0
57	0.0	0	0	0
58	0.0	0	0	0
59	0.0	0	0	0
60	0.0	0	0	0
61	0.0	0	0	0
62	0.0	0	0	0
63	0.0	0	0	0
64	0.0	0	0	0
65	0.0	0	0	0
66	0.0	0	0	0
67	0.0	0	0	0
68	0.0	0	0	0
69	0.0	0	0	0
70	0.0	0	0	0
71	0.0	0	0	0
72	0.0	0	0	0
73	0.0	0	0	0
74	0.0	0	0	0
75	0.0	0	0	0
76	0.6	1	0	1
77	1.0	1	1	1
78	0.0	0	0	0
79	0.0	0	0	0
80	0.2	0	0	1
81	0.2	0	0	1
82	0.2	0	0	1
83	0.0	0	0	0
84	0.0	0	0	0
85	1.0	1	1	1
86	0.0	0	0	0
87	0.0	0	0	0
88	0.0	0	0	0
89	0.0	0	0	0
90	0.0	0	0	0
91	0.0	0	0	0
92	0.0	0	0	0
93	0.0	0	0	0
94	0.0	0	0	0
95	0.0	0	0	0
96	0.0	0	0	0
97	0.0	0	0	0
98	0.0	0	0	0
99	0.0	0	0	0
100	0.0	0	0	0
101	0.0	0	0	0
102	0.0	0	0	0
103	0.0	0	0	0

TABLE 1 A (cont'd)
Experiment number 85

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.8	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.2	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	1.0	0	0	4	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	1.0	0	0	5	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.2	0	0	1	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.2	0	0	1
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 86

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.4	0	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.8	0	0	4	62	0.6	1	0	1
11	0.0	0	0	0	63	0.0	0	0	0
12	1.0	0	0	5	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.6	1	0	1	66	0.0	0	0	0
15	0.2	0	0	1	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.2	0	0	1
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.6	1	0	1
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 87

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.2	0	0	1
6	0.0	0	0	0	58	0.2	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.6	1	0	1	60	0.2	0	0	1
9	0.0	0	0	0	61	0.0	0	0	0
10	0.4	0	0	1	62	0.0	0	0	0
11	0.6	0	0	2	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	1.0	0	0	5
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.4	0	0	1
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.6	0	0	3	87	0.0	0	0	0
36	0.6	0	0	3	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.2	0	0	1	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 88

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.2	0	0	1
6	0.4	0	0	1	58	0.2	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.4	0	0	1
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.4	0	0	1
25	0.0	0	0	0	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.4	0	0	1
29	0.0	0	0	0	81	0.4	0	0	1
30	0.0	0	0	0	82	0.4	0	0	1
31	0.0	0	0	0	83	0.2	0	0	1
32	0.0	0	0	0	84	0.4	0	0	1
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.4	0	0	1
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 89

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.6	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.4	0	0	1
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.2	0	0	1	65	0.0	0	0	0
14	0.2	0	0	1	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.2	0	0	1	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.4	0	0	1
25	0.0	0	0	0	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.2	0	0	1	80	0.4	0	0	1
29	0.0	0	0	0	81	0.4	0	0	1
30	0.2	0	0	1	82	0.4	0	0	1
31	0.2	0	0	1	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.4	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	1.0	0	0	3	87	0.0	0	0	0
36	1.4	0	0	4	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.6	1	0	1	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.8	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.4	0	0	1
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 90

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.4	0	0	1
6	0.2	0	0	1	58	0.4	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.6	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.6	1	0	1
25	0.0	0	0	0	77	0.6	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.8	1	0	1
29	0.0	0	0	0	81	0.6	1	0	1
30	0.0	0	0	0	82	0.8	1	0	1
31	0.2	0	0	1	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.6	0	0	3	87	0.0	0	0	0
36	0.6	0	0	3	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 91

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	0.6	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.4	0	0	2	67	1.0	1	0	2
16	0.0	0	0	0	68	3.0	3	1	6
17	0.0	0	0	0	69	1.4	1	0	3
18	0.0	0	0	0	70	2.0	1	1	4
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.6	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.4	0	0	1
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)

Experiment number 92

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.6	1	0	1	66	0.0	0	0	0
15	0.0	0	0	0	67	0.4	0	0	1
16	0.0	0	0	0	68	1.8	1	1	3
17	0.0	0	0	0	69	0.4	0	0	2
18	0.0	0	0	0	70	1.8	1	1	3
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.2	0	0	1
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 93

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 94

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.4	0	0	1	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.8	1	0	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	3.0	0	0	6	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 95

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.4	0	0	1
32	0.0	0	0	0	84	0.4	0	0	1
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	2.0	2	1	3	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 96

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	2.0	2	2	2	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.8	1	0	1
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.8	1	0	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 97

Var	Mean	Mode	Min	Max
1	3.0	3	3	3
2	1.0	1	1	1
3	1.0	1	1	1
4	1.0	1	1	1
5	1.0	1	1	1
6	0.0	0	0	0
7	0.0	0	0	0
8	0.0	0	0	0
9	0.0	0	0	0
10	0.0	0	0	0
11	0.0	0	0	0
12	0.0	0	0	0
13	0.0	0	0	0
14	0.0	0	0	0
15	0.0	0	0	0
16	0.0	0	0	0
17	0.0	0	0	0
18	0.0	0	0	0
19	0.0	0	0	0
20	0.0	0	0	0
21	0.0	0	0	0
22	0.0	0	0	0
23	0.0	0	0	0
24	0.0	0	0	0
25	0.0	0	0	0
26	0.0	0	0	0
27	0.0	0	0	0
28	0.0	0	0	0
29	0.0	0	0	0
30	0.0	0	0	0
31	0.0	0	0	0
32	0.0	0	0	0
33	0.0	0	0	0
34	0.0	0	0	0
35	0.0	0	0	0
36	0.0	0	0	0
37	0.0	0	0	0
38	0.0	0	0	0
39	0.0	0	0	0
40	0.0	0	0	0
41	0.0	0	0	0
42	0.0	0	0	0
43	0.0	0	0	0
44	0.0	0	0	0
45	0.0	0	0	0
46	0.0	0	0	0
47	0.0	0	0	0
48	0.0	0	0	0
49	0.0	0	0	0
50	0.0	0	0	0
51	0.0	0	0	0
52	0.0	0	0	0

Var	Mean	Mode	Min	Max
53	0.0	0	0	0
54	0.0	0	0	0
55	0.0	0	0	0
56	0.0	0	0	0
57	0.0	0	0	0
58	0.0	0	0	0
59	0.0	0	0	0
60	0.0	0	0	0
61	0.0	0	0	0
62	0.0	0	0	0
63	0.0	0	0	0
64	0.0	0	0	0
65	0.0	0	0	0
66	0.0	0	0	0
67	0.0	0	0	0
68	0.0	0	0	0
69	0.0	0	0	0
70	0.0	0	0	0
71	0.0	0	0	0
72	0.0	0	0	0
73	0.0	0	0	0
74	0.0	0	0	0
75	0.0	0	0	0
76	0.0	0	0	0
77	0.0	0	0	0
78	0.0	0	0	0
79	0.0	0	0	0
80	0.0	0	0	0
81	0.0	0	0	0
82	0.0	0	0	0
83	0.0	0	0	0
84	0.0	0	0	0
85	0.0	0	0	0
86	0.0	0	0	0
87	0.0	0	0	0
88	0.0	0	0	0
89	0.0	0	0	0
90	0.0	0	0	0
91	0.0	0	0	0
92	0.0	0	0	0
93	0.0	0	0	0
94	0.0	0	0	0
95	0.0	0	0	0
96	0.0	0	0	0
97	0.0	0	0	0
98	0.0	0	0	0
99	0.0	0	0	0
100	0.0	0	0	0
101	0.0	0	0	0
102	0.0	0	0	0
103	0.0	0	0	0

TABLE 1 A (cont'd)
Experiment number 98

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)

Experiment number 99

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 100

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 101

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 102

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 103

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 104

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.2	0	0	1
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	0.4	0	0	2
5	1.0	1	1	1	57	0.2	0	0	1
6	0.0	0	0	0	58	0.2	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.4	0	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.2	0	0	1
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.6	0	0	3	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.2	0	0	1	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.2	0	0	1	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.8	0	0	4	87	0.0	0	0	0
36	1.8	0	0	9	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.4	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	2.2	0	0	8	93	0.0	0	0	0
42	3.6	0	0	9	94	0.0	0	0	0
43	0.6	0	0	3	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.4	0	0	1	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.2	0	0	1
49	0.6	0	0	2	101	0.2	0	0	1
50	0.2	0	0	1	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.2	0	0	1					

TABLE 1 A (cont'd)
Experiment number 105

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.4	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	1.0	0	0	3	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.4	0	0	1	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.4	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	1.0	0	0	3	87	0.0	0	0	0
36	1.8	0	0	6	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	1	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 106

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 107

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.8	1	0	1
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	1.6	2	0	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.6	1	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.8	1	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.8	0	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.6	1	0	1	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.4	3	1	3	87	0.0	0	0	0
36	4.2	1	1	9	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.8	1	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.6	2	1	2	92	0.0	0	0	0
41	4.4	5	0	9	93	0.0	0	0	0
42	6.4	9	0	9	94	0.0	0	0	0
43	1.4	0	0	3	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.6	1	0	1
49	0.8	1	0	1	101	0.4	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 108

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	1.0	1	1	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	2.4	3	1	3	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.8	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.2	0	0	1	82	0.0	0	0	0
31	0.2	0	0	1	83	0.0	0	0	0
32	0.6	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	3.0	3	3	3	87	0.0	0	0	0
36	5.2	5	5	6	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	1.8	2	1	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 109

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.2	0	0	1
6	1.0	1	1	1	58	0.2	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.2	0	0	1	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 110

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.8	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.2	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.2	0	0	1	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 111

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.2	0	0	1
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 112

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	1.0	1	1	1	56	0.4	0	0	2
5	0.0	0	0	0	57	0.4	0	0	1
6	0.8	1	0	1	58	0.4	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.2	0	0	1
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.4	0	0	1	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	1.2	0	0	3	80	0.4	0	0	1
29	0.2	0	0	1	81	0.4	0	0	1
30	0.4	0	0	1	82	0.4	0	0	1
31	0.2	0	0	1	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.6	1	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.8	0	0	5	87	0.0	0	0	0
36	3.8	0	0	8	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.2	0	0	1	91	0.0	0	0	0
40	1.2	2	0	2	92	0.0	0	0	0
41	1.8	0	0	9	93	0.0	0	0	0
42	1.6	0	0	8	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.2	0	0	1
47	0.2	0	0	1	99	0.2	0	0	1
48	0.0	0	0	0	100	0.0	0	0	0
49	0.6	0	0	3	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 113

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.8	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.2	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.2	0	0	1	80	0.4	0	0	1
29	0.0	0	0	0	81	0.2	0	0	1
30	0.0	0	0	0	82	0.2	0	0	1
31	0.2	0	0	1	83	0.0	0	0	0
32	0.2	0	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.4	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.2	0	0	8	87	0.0	0	0	0
36	2.2	0	0	6	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.8	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 114

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	2.0	2	2	2	62	0.0	0	0	0
11	0.4	0	0	2	63	0.0	0	0	0
12	8.2	9	5	9	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 115

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.8	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	1.0	1	1	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	2.2	0	0	7	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 116

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.8	1	0	1
32	0.0	0	0	0	84	0.2	0	0	1
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	2.2	2	0	4	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 117

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 118

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.6	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.8	0	0	2	67	2.0	2	0	4
16	0.0	0	0	0	68	2.4	3	0	4
17	0.0	0	0	0	69	2.0	2	0	4
18	0.0	0	0	0	70	1.8	2	0	4
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 119

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	1.0	1	0	2
16	0.0	0	0	0	68	2.6	3	2	3
17	0.0	0	0	0	69	1.6	2	1	2
18	0.0	0	0	0	70	2.2	2	1	4
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.2	0	0	1
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 120

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	1.0	1	1	1	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.4	0	0	1
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 121

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 122

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 123

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 124

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 125

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	2.0	2	1	3	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	4.0	5	0	5	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 126

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	1.0	1	1	1	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.4	0	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 127

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.2	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.8	0	0	2
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.6	1	0	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.8	1	0	1
25	0.2	0	0	1	77	0.6	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.6	0	0	2	80	1.0	1	1	1
29	0.2	0	0	1	81	0.8	1	0	1
30	0.0	0	0	0	82	0.8	1	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	3.6	2	1	9	87	0.0	0	0	0
36	4.2	3	1	9	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.4	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	2.0	2	2	2	92	0.0	0	0	0
41	1.2	0	0	4	93	0.0	0	0	0
42	2.0	0	0	6	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.2	0	0	1
47	0.0	0	0	0	99	0.2	0	0	1
48	0.0	0	0	0	100	0.4	0	0	1
49	0.4	0	0	1	101	0.4	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 128

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.4	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	0.8	0	0	2
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.8	1	0	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.2	0	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.6	1	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.8	0	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	1.0	1	1	1
25	0.0	0	0	0	77	0.8	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	1.0	1	1	1	80	0.6	1	0	1
29	0.4	0	0	1	81	0.6	1	0	1
30	0.0	0	0	0	82	0.6	1	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.8	2	2	4	87	0.0	0	0	0
36	5.0	3	3	7	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.4	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.4	1	1	2	92	0.0	0	0	0
41	1.2	0	0	3	93	0.0	0	0	0
42	1.0	0	0	3	94	0.0	0	0	0
43	0.2	0	0	1	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.4	0	0	1
46	0.0	0	0	0	98	0.4	0	0	1
47	0.0	0	0	0	99	0.4	0	0	1
48	0.0	0	0	0	100	0.4	0	0	1
49	0.4	0	0	1	101	0.4	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 129

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.4	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	1.0	0	0	2
5	1.0	1	1	1	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.4	0	0	1
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.2	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.6	0	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.2	0	0	1
25	0.0	0	0	0	77	0.6	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.6	1	0	1
29	0.0	0	0	0	81	0.6	1	0	1
30	0.0	0	0	0	82	0.6	1	0	1
31	0.2	0	0	1	83	0.0	0	0	0
32	0.8	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	2.0	1	1	3	87	0.0	0	0	0
36	3.4	2	2	5	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.6	1	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.4	1	1	2	92	0.0	0	0	0
41	1.4	0	0	3	93	0.0	0	0	0
42	2.8	0	0	5	94	0.0	0	0	0
43	0.2	0	0	1	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.2	0	0	1
47	0.0	0	0	0	99	0.2	0	0	1
48	0.0	0	0	0	100	0.6	1	0	1
49	0.0	0	0	0	101	0.6	1	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.2	0	0	1					

TABLE 1 A (cont'd)
Experiment number 130

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.2	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	1.0	1	1	1	56	0.2	0	0	1
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.2	0	0	1
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.4	0	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	1.0	1	1	1
25	0.6	1	0	1	77	1.0	1	1	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	1.8	3	0	3	80	1.0	1	1	1
29	0.0	0	0	0	81	1.0	1	1	1
30	0.0	0	0	0	82	1.0	1	1	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.8	1	0	1	84	0.0	0	0	0
33	0.0	0	0	0	85	0.8	1	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	5.2	0	0	9	87	0.0	0	0	0
36	6.8	9	0	9	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.6	2	0	2	92	0.0	0	0	0
41	0.8	0	0	4	93	0.0	0	0	0
42	1.8	0	0	9	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.2	0	0	1	98	0.2	0	0	1
47	0.0	0	0	0	99	0.2	0	0	1
48	0.0	0	0	0	100	0.2	0	0	1
49	0.4	0	0	2	101	0.2	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 131

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.2	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	2.0	2	2	2	56	0.4	0	0	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.4	0	0	1
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.2	0	0	1
20	0.4	0	0	1	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.8	0	0	2	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	1.0	1	1	1
25	0.0	0	0	0	77	1.0	1	1	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	1.2	1	1	2	80	1.0	1	1	1
29	0.0	0	0	0	81	1.0	1	1	1
30	0.0	0	0	0	82	1.0	1	1	1
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	3.8	3	1	8	87	0.0	0	0	0
36	5.2	3	3	8	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	1.8	2	1	2	92	0.0	0	0	0
41	1.8	0	0	9	93	0.0	0	0	0
42	1.4	0	0	7	94	0.0	0	0	0
43	0.6	0	0	3	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.2	0	0	1
47	0.2	0	0	1	99	0.2	0	0	1
48	0.0	0	0	0	100	0.2	0	0	1
49	0.2	0	0	1	101	0.2	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 132

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.2	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	2.0	2	2	2	55	0.0	0	0	0
4	3.0	3	3	3	56	0.4	0	0	2
5	2.0	2	2	2	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.8	1	0	1
25	0.0	0	0	0	77	1.0	1	1	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	1.0	1	1	1
29	0.0	0	0	0	81	0.8	1	0	1
30	0.0	0	0	0	82	0.8	1	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	1.0	1	1	1	84	0.0	0	0	0
33	0.0	0	0	0	85	1.0	1	1	1
34	0.0	0	0	0	86	0.0	0	0	0
35	1.0	1	1	1	87	0.0	0	0	0
36	2.0	2	2	2	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.2	0	0	1	91	0.0	0	0	0
40	1.0	1	0	2	92	0.0	0	0	0
41	0.4	0	0	2	93	0.0	0	0	0
42	0.4	0	0	2	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.2	0	0	1
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.2	0	0	1
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 133

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.8	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.4	0	0	1
11	0.0	0	0	0	63	0.2	0	0	1
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.8	1	0	1	66	0.0	0	0	0
15	0.2	0	0	1	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.2	0	0	1
27	0.0	0	0	0	79	0.0	0	0	0
28	0.6	0	0	3	80	0.0	0	0	0
29	0.0	0	0	0	81	0.2	0	0	1
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.2	0	0	1	90	0.0	0	0	0
39	0.4	0	0	2	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.4	0	0	1
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 134

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.4	0	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.8	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.8	0	0	4	62	0.6	1	0	1
11	0.4	0	0	2	63	0.0	0	0	0
12	0.6	0	0	3	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.8	1	0	1	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.6	1	0	1
51	0.0	0	0	0	103	0.4	0	0	1
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 135

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	3.0	3	3	3	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.2	0	0	1
6	0.0	0	0	0	58	0.2	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.2	0	0	1	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.2	0	0	1	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.4	0	0	1
25	0.0	0	0	0	77	0.4	0	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.6	1	0	1
29	0.0	0	0	0	81	0.4	0	0	1
30	0.0	0	0	0	82	0.4	0	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.2	0	0	1
34	0.2	0	0	1	86	0.0	0	0	0
35	1.2	0	0	6	87	0.0	0	0	0
36	1.4	0	0	7	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.4	0	0	2	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 136

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.2	0	0	1
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	1.0	1	1	1	56	0.2	0	0	1
5	0.0	0	0	0	57	0.4	0	0	1
6	0.4	0	0	1	58	0.4	0	0	1
7	0.0	0	0	0	59	0.0	0	0	0
8	0.6	1	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.2	0	0	1
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.6	1	0	1
25	0.0	0	0	0	77	0.6	1	0	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.6	0	0	3	80	0.6	1	0	1
29	0.0	0	0	0	81	0.6	1	0	1
30	0.0	0	0	0	82	0.6	1	0	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.4	0	0	1	84	0.2	0	0	1
33	0.0	0	0	0	85	0.4	0	0	1
34	0.0	0	0	0	86	0.0	0	0	0
35	0.8	0	0	3	87	0.0	0	0	0
36	1.2	0	0	5	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.2	0	0	1
39	0.0	0	0	0	91	0.0	0	0	0
40	0.6	0	0	2	92	0.0	0	0	0
41	0.6	0	0	3	93	0.0	0	0	0
42	1.0	0	0	5	94	0.0	0	0	0
43	0.2	0	0	1	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.2	0	0	1
49	0.6	0	0	3	101	0.2	0	0	1
50	0.0	0	0	0	102	0.2	0	0	1
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 137

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.6	1	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.4	0	0	1
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	1.0	1	1	1	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.6	1	0	1
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.4	0	0	1	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.4	0	0	1
51	0.0	0	0	0	103	0.2	0	0	1
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 138

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	4.0	4	4	4	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.2	0	0	1	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	1.0	1	1	1
25	0.0	0	0	0	77	1.0	1	1	1
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	1.0	1	1	1
29	0.0	0	0	0	81	1.0	1	1	1
30	0.0	0	0	0	82	1.0	1	1	1
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 139

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.2	0	0	1	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.4	0	0	2	67	1.4	1	1	2
16	0.0	0	0	0	68	2.8	2	2	4
17	0.0	0	0	0	69	1.6	1	1	3
18	0.0	0	0	0	70	2.6	2	1	4
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.8	1	0	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.2	0	0	1
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 140

Var	Mean	Mode	Min	Max
1	3.0	3	3	3
2	3.0	3	3	3
3	5.0	5	5	5
4	2.0	2	2	2
5	0.0	0	0	0
6	0.0	0	0	0
7	0.0	0	0	0
8	0.0	0	0	0
9	0.0	0	0	0
10	0.0	0	0	0
11	0.0	0	0	0
12	0.0	0	0	0
13	0.0	0	0	0
14	0.0	0	0	0
15	0.0	0	0	0
16	0.0	0	0	0
17	0.0	0	0	0
18	0.0	0	0	0
19	0.0	0	0	0
20	0.0	0	0	0
21	0.0	0	0	0
22	0.0	0	0	0
23	0.0	0	0	0
24	0.0	0	0	0
25	0.0	0	0	0
26	0.0	0	0	0
27	0.0	0	0	0
28	0.0	0	0	0
29	0.0	0	0	0
30	0.0	0	0	0
31	0.0	0	0	0
32	0.0	0	0	0
33	0.0	0	0	0
34	0.0	0	0	0
35	0.0	0	0	0
36	0.0	0	0	0
37	0.0	0	0	0
38	0.0	0	0	0
39	0.0	0	0	0
40	0.0	0	0	0
41	0.0	0	0	0
42	0.0	0	0	0
43	0.0	0	0	0
44	0.0	0	0	0
45	0.0	0	0	0
46	0.0	0	0	0
47	0.0	0	0	0
48	0.0	0	0	0
49	0.0	0	0	0
50	0.0	0	0	0
51	0.0	0	0	0
52	0.0	0	0	0

Var	Mean	Mode	Min	Max
53	0.0	0	0	0
54	0.0	0	0	0
55	0.0	0	0	0
56	0.0	0	0	0
57	0.0	0	0	0
58	0.0	0	0	0
59	0.0	0	0	0
60	0.0	0	0	0
61	0.0	0	0	0
62	0.0	0	0	0
63	0.0	0	0	0
64	0.0	0	0	0
65	0.0	0	0	0
66	0.0	0	0	0
67	0.8	1	0	1
68	2.0	2	1	3
69	1.4	2	0	2
70	2.0	1	1	3
71	0.0	0	0	0
72	1.0	1	1	1
73	0.0	0	0	0
74	0.0	0	0	0
75	0.0	0	0	0
76	0.0	0	0	0
77	0.0	0	0	0
78	0.0	0	0	0
79	0.0	0	0	0
80	0.0	0	0	0
81	0.0	0	0	0
82	0.0	0	0	0
83	0.0	0	0	0
84	0.0	0	0	0
85	0.0	0	0	0
86	0.0	0	0	0
87	0.0	0	0	0
88	0.0	0	0	0
89	0.0	0	0	0
90	0.0	0	0	0
91	0.0	0	0	0
92	0.0	0	0	0
93	0.0	0	0	0
94	0.0	0	0	0
95	0.0	0	0	0
96	0.0	0	0	0
97	0.0	0	0	0
98	0.0	0	0	0
99	0.0	0	0	0
100	0.0	0	0	0
101	0.0	0	0	0
102	0.0	0	0	0
103	0.0	0	0	0

TABLE 1 A (cont'd)
Experiment number 141

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	5.0	5	5	5	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.0	0	0	0	59	0.0	0	0	0
8	0.0	0	0	0	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.0	0	0	0
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	3	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 142

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	1.0	1	1	1	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	1.0	1	1	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	1.8	0	0	4	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 143

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	2.0	2	2	2	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	1.0	1	1	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.0	0	0	0	65	0.2	0	0	1
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	0.0	0	0	0
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	0.0	0	0	0
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	0.0	0	0	0
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.0	0	0	0
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	1.0	1	1	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.8	0	0	2	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 A (cont'd)
Experiment number 144

Var	Mean	Mode	Min	Max	Var	Mean	Mode	Min	Max
1	3.0	3	3	3	53	0.0	0	0	0
2	3.0	3	3	3	54	0.0	0	0	0
3	6.0	6	6	6	55	0.0	0	0	0
4	3.0	3	3	3	56	0.0	0	0	0
5	0.0	0	0	0	57	0.0	0	0	0
6	0.0	0	0	0	58	0.0	0	0	0
7	0.2	0	0	1	59	0.0	0	0	0
8	0.4	0	0	1	60	0.0	0	0	0
9	0.0	0	0	0	61	0.0	0	0	0
10	0.0	0	0	0	62	0.0	0	0	0
11	0.0	0	0	0	63	0.0	0	0	0
12	0.0	0	0	0	64	0.0	0	0	0
13	0.2	0	0	1	65	0.0	0	0	0
14	0.0	0	0	0	66	0.0	0	0	0
15	0.0	0	0	0	67	0.0	0	0	0
16	0.0	0	0	0	68	1.0	1	1	1
17	0.0	0	0	0	69	0.0	0	0	0
18	0.0	0	0	0	70	1.0	1	1	1
19	0.0	0	0	0	71	0.0	0	0	0
20	0.0	0	0	0	72	1.0	1	1	1
21	0.0	0	0	0	73	0.0	0	0	0
22	0.0	0	0	0	74	0.0	0	0	0
23	0.0	0	0	0	75	0.0	0	0	0
24	0.0	0	0	0	76	0.0	0	0	0
25	0.0	0	0	0	77	0.0	0	0	0
26	0.0	0	0	0	78	0.0	0	0	0
27	0.0	0	0	0	79	0.0	0	0	0
28	0.0	0	0	0	80	0.8	1	0	1
29	0.0	0	0	0	81	0.0	0	0	0
30	0.0	0	0	0	82	0.0	0	0	0
31	0.0	0	0	0	83	0.2	0	0	1
32	0.0	0	0	0	84	0.0	0	0	0
33	0.0	0	0	0	85	0.0	0	0	0
34	0.0	0	0	0	86	0.0	0	0	0
35	0.0	0	0	0	87	0.0	0	0	0
36	0.0	0	0	0	88	0.0	0	0	0
37	0.0	0	0	0	89	0.0	0	0	0
38	0.0	0	0	0	90	0.0	0	0	0
39	0.0	0	0	0	91	0.0	0	0	0
40	0.0	0	0	0	92	0.0	0	0	0
41	0.0	0	0	0	93	0.0	0	0	0
42	0.0	0	0	0	94	0.0	0	0	0
43	0.0	0	0	0	95	0.0	0	0	0
44	0.0	0	0	0	96	0.0	0	0	0
45	0.0	0	0	0	97	0.0	0	0	0
46	0.0	0	0	0	98	0.0	0	0	0
47	0.0	0	0	0	99	0.0	0	0	0
48	0.0	0	0	0	100	0.0	0	0	0
49	0.0	0	0	0	101	0.0	0	0	0
50	0.0	0	0	0	102	0.0	0	0	0
51	0.0	0	0	0	103	0.0	0	0	0
52	0.0	0	0	0					

TABLE 1 B: SUMMARY OF OUTPUT VARIABLES DISTRIBUTION

	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	55	57	58	59	60	61
1																							
2																							
3																							
4																							
5																							
6					x	x	x	x	x	x	x												x
7	x											x		x		x	x						
8		x	x	x	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	
9						x	x	x									x						
10						x	x	x		x							x						
11																	x						
12						x		x		x													
13									x														
14																							
15																							
16																							
17																							
18																x							
19																							
20	x	x	x	x	x																x	x	
21																x		x	x				
22	x	x	x	x																	x	x	
23			x																				
24																							
25			x	x																			
26	x		x																		x		
27	x		x	x																			
28										x								x			x		
29	x		x																				
30	x																						
31		x									x												
32	x	x	x	x	x													x	x	x	x	x	
33																							
34										x													
35	x	x	x	x	x				x	x	x							x	x	x	x	x	
36	x	x	x	x	x				x	x	x							x	x	x	x	x	
37																							
38																							
39																x					x		
40	x	x	x	x	x				x	x	x				x			x	x	x	x	x	
41	x			x							x									x	x		
42				x							x									x	x		
43	x			x																	x		
44																							
45	x																						
46				x																	x		
47																					x		
48	x			x																			
49				x																x	x		
50	x																				x		

	64	65	66	67	68	69	70	71	72	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
1																								
2																								
3																								
4																								
5																								
6	x	x																			x	x		x
7								x	x															
8	x	x			x		x	x	x						x	x	x	x	x	x	x	x	x	x
9																								
10	x		x							x	x	x	x	x	x				x		x	x	x	
11			x																				x	
12			x										x	x							x			
13	x																					x	x	
14																					x			
15																						x		
16																								
17																								
18								x																
19																								
20	x														x	x		x	x	x				
21																								
22															x	x		x	x	x				
23																								
24																			x					
25	x																							
26																			x					
27																								
28	x	x													x	x		x	x					
29																x		x	x					
30	x																	x						
31																				x				
32		x													x	x	x	x	x	x				x
33																								
34																								
35	x	x													x	x	x	x	x	x				x
36	x	x													x	x	x	x	x	x				x
37																								
38								x																
39							x																	
40	x	x													x	x	x	x	x	x				x
41															x	x		x	x					
42															x	x		x	x					
43															x	x			x					
44																								
45																								
46																		x	x					
47																			x					
48															x									
49															x	x		x	x					
50																x			x					

	89	90	91	92	94	95	96	104	105	107	108	109	110	111	112	113	114	115	116	117	118	119	120	125
1																								
2																								
3																								
4																								
5																								
6	x	x										x	x		x	x								
7			x	x	x	x	x												x					
8	x	x	x		x	x		x	x	x	x	x	x		x	x	x	x	x		x			
9																								
10																	x							x
11																	x							
12																	x							x
13	x																							
14	x			x								x	x											
15			x																					
16																								
17																								
18																								
19																								
20								x	x	x	x													
21	x																							
22								x	x	x	x													
23																								
24																								
25								x							x									
26																								
27																								
28	x							x		x					x	x								
29															x									
30	x										x				x									
31	x	x							x		x				x	x								
32								x		x	x					x								
33																								
34																								
35	x	x						x	x	x	x				x	x								
36	x	x						x	x	x	x				x	x								
37																								
38	x														x			x	x					
39	x	x			x	x		x	x	x	x				x	x								
40								x		x					x									
41								x		x					x									
42								x		x														
43																								
44																								
45																								
46								x																
47															x									
48																								
49								x		x					x									
50								x																

	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
1																		
2																		
3																		
4																		
5																		
6								x	x		x	x	x					
7																	x	x
8		x	x	x	x	x	x	x	x	x	x	x	x	x			x	x
9																		
10	x								x	x								
11									x									
12									x									
13														x				
14								x	x			x						
15								x						x				
16																		
17																		
18																		
19																		
20		x	x	x		x												
21																		
22		x	x		x	x				x								
23																		
24																		
25		x			x													
26																		
27																		
28		x	x		x	x		x			x							
29		x	x															
30																		
31				x														
32		x	x	x	x	x	x				x							
33																		
34										x								
35		x	x	x	x	x	x			x	x							
36		x	x	x	x	x	x			x	x							
37																		
38								x				x						
39							x	x									x	x
40		x	x	x	x	x	x			x	x							
41		x	x	x	x	x	x				x							
42		x	x	x		x	x				x							
43			x	x		x					x							
44																		
45																		
46					x													
47						x												
48																		
49		x	x		x	x					x							
50																		

	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	55	57	58	59	60	61
51	x																				x		
52																					x		
53	x			x																x	x		
54																							
55																							
56	x			x						x	x									x	x		
57		x							x	x	x												
58		x							x	x	x												
59	x		x	x																			
60		x																					
61	x																				x		
62									x														
63																							
64																							
65																							
66																							
67												x	x	x									
68												x	x	x			x						
69												x	x	x			x						
70												x	x	x			x						
71																							
72												x	x	x			x						
73																							
74													x	x									
75																x	x						
76	x		x	x	x	x			x	x	x				x		x	x		x			
77	x	x	x	x	x				x	x	x						x	x	x	x		X	
78																							
79																							
80	x		x	x					x	x	x					x	x			x			
81				x					x	x	x						x			x			
82	x			x					x	x	x						x			x			
83															x	x	x						
84																							
85	x	x	x	x	x				x	x	x							x	x	x	x	x	
86																							
87																							
88																							
89																							
90	x			x							x									x	x		
91																							
92																							
93																							
94																							
95																							
96																							
97				x							x									x	x		
98				x																x			
99	x			x																x			
100	x			x																x	x		
101				x							x									x	x		
102									x														
103																							

	64	65	66	67	68	69	70	71	72	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
51																								
52																								
53															x	x		x	x					
54																								
55																								
56															x	x		x	x				x	
57		x														x							x	x
58		x														x								x
59															x	x		x						
60						x			x								x						x	
61															x	x		x	x				x	
62																						x		x
63																								
64																								
65																								
66																							x	
67				x	x																			
68				x	x	x			x															
69				x	x	x			x															
70				x	x	x			x															
71																								
72				x	x	x			x															
73																								
74					x																			
75																								
76	x	x													x					x				x
77	x														x			x	x	x			x	x
78																								
79																								
80																		x		x	x			x
81		x													x			x		x				x
82																		x		x				x
83							x	x	x															x
84						x																		x
85	x	x													x	x	x	x	x	x			x	
86																								
87																								
88																								
89																								
90															x	x		x	x					
91																								
92																								
93																								
94																								
95																								
96																								
97															x	x		x						
98																		x						
99																		x						
100															x	x		x	x					
101															x	x		x	x					
102																						x		x
103																								

	89	90	91	92	94	95	96	104	105	107	108	109	110	111	112	113	114	115	116	117	118	119	120	125
51																								
52								x																
53								x		x														
54																								
55																								
56								x		x					x									
57		x						x				x			x									
58		x						x				x			x									
59																								
60														x										
61								x		x														
62	x	x																						
63																								
64															x									
65																								
66																								
67			x	x																		x	x	x
68			x	x			x														x	x	x	x
69			x	x																		x	x	
70			x	x			x														x	x	x	x
71								x																
72			x	x			x														x	x	x	x
73																								
74				x																				
75			x																					
76	x	x							x	x	x				x	x			x					
77	x	x							x	x	x				x	x		x						
78																								
79																								
80	x	x													x	x								
81	x	x													x	x								
82	x	x													x	x								
83					x	x												x	x					
84						x													x				x	
85	x	x						x	x	x	x				x	x								
86																								
87																								
88																								
89																								
90								x		x					x									
91																								
92																								
93																								
94																								
95																								
96																								
97																								
98															x									
99															x									
100															x									
101								x		x														
102								x		x														
103	x																							

	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
51																		
52				x														
53		x	x	x	x	x	x				x							
54																		
55																		
56		x	x	x	x	x	x											
57										x	x							
58										x	x							
59		x	x			x												
60																		
61			x	x														
62								x	x		x	x						
63								x										
64																		
65																		x
66																		
67														x	x			
68														x	x	x		
69														x	x			
70														x	x	x		
71					x	x												
72														x	x	x		
73																		
74														x				
75																		
76		x	x	x	x	x	x			x	x		x					
77		x	x	x	x	x	x			x	x		x					
78								x										
79																		
80		x	x	x	x	x	x			x	x	x	x					
81		x	x	x	x	x	x	x		x	x		x					
82		x	x	x		x	x			x	x		x				x	
83																		x
84											x							
85		x	x	x	x	x	x			x	x							
86																		
87																		
88																		
89																		
90		x	x	x	x	x	x				x							
91																		
92																		
93																		
94																		
95																		
96																		
97		x	x	x	x	x	x											
98		x	x	x	x	x												
99		x	x	x	x	x												
100		x	x	x	x	x					x							
101		x	x	x	x	x	x				x							
102								x	x		x	x						
103									x			x						

TABLE 2: FREQUENCY DISTRIBUTIONS OF ALL OUTPUT VARIABLES

Variable	Value	Absolute Frequency	Relative Frequency Percent
VAR 006	1.0	660	91.7
	1.00	60	8.3
007	0.0	694	96.4
	1.00	26	3.6
008	0.0	467	64.9
	1.00	253	35.1
009	0.0	709	98.5
	1.00	1	0.1
	3.00	10	1.4
010	0.0	663	92.1
	1.00	34	4.7
	2.00	15	2.1
	3.00	1	0.1
	4.00	7	1.0
011	0.0	715	99.3
	1.00	1	0.1
	2.00	4	0.6
012	0.0	698	96.9
	2.00	2	0.3
	3.00	4	0.6
	5.00	7	1.0
	6.00	2	0.3
	7.00	1	0.1
	8.00	1	0.1
	9.00	5	0.7
013	0.0	711	98.7
	1.00	9	1.2
014	0.0	697	96.8
	1.00	23	3.2
015	0.0	714	99.2
	1.00	2	0.3
	2.00	4	0.6
016	0.0	720	100.0
017	0.0	720	100.0
018	0.0	717	99.6
	2.00	1	0.1
	6.00	2	0.3
019	0.0	720	100.0
020	0.0	666	92.5
	1.00	54	7.5

Variable	Value	Absolute Frequency	Relative Frequency Percent
VAR 021	0.0	718	99.7
	1.00	2	0.3
022	0.0	664	92.2
	1.00	22	3.1
	2.00	22	3.1
	3.00	12	1.7
023	0.0	719	99.9
	1.00	1	0.1
024	0.0	719	99.9
	1.00	1	0.1
025	0.0	710	98.6
	1.00	10	1.4
026	0.0	716	99.4
	1.00	4	0.6
027	0.0	712	98.9
	1.00	6	0.8
	2.00	2	0.3
028	0.0	675	93.8
	1.00	31	4.3
	2.00	9	1.2
	3.00	5	0.7
029	0.0	709	98.5
	1.00	11	1.5
030	0.0	713	99.0
	1.00	7	1.0
031	0.0	709	98.5
	1.00	11	1.5
032	0.0	627	87.1
	1.00	93	12.9
033	0.0	720	100.0
034	0.0	718	99.7
	1.00	2	0.3
035	0.0	602	83.6
	1.00	25	3.5
	2.00	28	3.9
	3.00	34	4.7
	4.00	17	2.4
	5.00	7	1.0
	6.00	2	0.3
	8.00	3	0.4
	9.00	2	0.3

Variable	Value	Absolute Frequency	Relative Frequency Percent
VAR 036	0.0	602	83.6
	1.00	6	0.8
	2.00	16	2.2
	3.00	25	3.5
	4.00	18	2.5
	5.00	19	2.6
	6.00	13	1.8
	7.00	9	1.2
	8.00	5	0.7
	9.00	7	1.0
037	0.0	720	100.0
038	0.0	712	98.9
	1.00	8	1.1
039	0.0	678	94.2
	1.00	10	1.4
	2.00	13	1.8
	3.00	10	1.4
	4.00	6	0.8
	5.00	1	0.1
	6.00	1	0.1
	7.00	1	0.1
040	0.0	605	84.0
	1.00	27	3.7
	2.00	88	12.2
041	0.0	677	94.0
	2.00	5	0.7
	3.00	18	2.5
	4.00	8	1.1
	5.00	6	0.8
	6.00	2	0.3
	8.00	1	0.1
	9.00	3	0.4
042	0.0	677	94.0
	1.00	1	0.1
	2.00	2	0.3
	3.00	4	0.6
	4.00	5	0.7
	5.00	5	0.7
	6.00	5	0.7
	7.00	2	0.3
	8.00	6	0.8
	9.00	13	1.8
043	0.0	697	96.8
	1.00	9	1.2
	2.00	7	1.0
	3.00	7	1.0

Variable	Value	Absolute Frequency	Relative Frequency Percent
VAR 044	0.0	720	100.0
045	0.0	720	100.0
046	0.0	710	98.6
	0.1	10	
047	0.0	714	99.2
	0.1	7	
048	0.0	712	98.9
	0.1	8	
049	0.0	690	95.8
	1.00	21	2.9
	2.00	6	0.8
	3.00	3	0.4
050	0.0	715	99.3
	1.00	5	0.7
051	0.0	718	99.7
	1.00	2	0.3
052	0.0	717	99.6
	1.00	3	0.4
053	0.0	686	95.3
	1.00	34	4.7
054	0.0	720	100.0
055	0.0	720	100.0
056	0.0	677	94.0
	1.00	7	1.0
	2.00	36	5.0
057	0.0	698	96.9
	1.00	22	3.1
058	0.0	698	96.9
	1.00	22	3.1
059	0.0	697	96.8
	1.00	23	3.2
060	0.0	712	98.9
	1.00	8	1.1
061	0.0	700	97.8
	1.00	20	2.8
062	0.0	704	97.8
	1.00	16	2.2
063	0.0	719	99.9
	1.00	1	0.1

Variable	Value	Absolute Frequency	Relative Frequency Percent
VAR 064	0.0	719	99.9
	1.00	1	0.0
065	0.0	719	99.9
	1.00	1	0.1
066	0.0	716	
	0.0	0.0	100.0
067	0.0	678	94.2
	1.00	33	4.6
	2.00	8	1.1
	4.00	1	0.1
068	0.0	617	85.7
	1.00	62	8.6
	2.00	19	2.6
	3.00	16	2.2
	4.00	4	0.6
	5.00	1	0.1
	6.00	1	0.1
069	0.0	674	93.6
	1.00	26	3.6
	2.00	17	2.4
	3.00	2	0.3
070	0.0	624	86.7
	1.00	64	8.9
	2.00	16	2.2
	3.00	8	1.1
	4.00	7	1.0
	5.00	1	0.1
071	0.0	717	99.6
	1.00	3	0.4
072	0.0	628	87.2
	1.0	92	12.8
073	0.0	720	100.0
074	0.0	714	99.2
	1.00	6	0.8
075	0.0	715	99.3
	1.00	5	0.7
076	0.0	640	88.9
	1.00	80	11.1
077	0.0	623	86.5
	1.00	97	13.5

Variable	Value	Absolute Frequency	Relative Frequency Percent
VAR 078	0.0	719	99.9
	1.00	1	0.1
079	0.0	720	100.0
080	0.0	643	89.3
	1.00	77	10.7
081	0.0	658	91.4
	1.00	62	8.6
082	0.0	661	91.8
	1.00	59	8.2
083	0.0	668	92.8
	1.00	52	7.2
084	0.0	712	98.9
	1.00	8	1.1
085	0.0	602	83.6
	1.00	118	16.4
086	0.0	720	100.0
087	0.0	720	100.0
088	0.0	720	100.0
089	0.0	720	100.0
090	0.0	677	94.0
	1.00	43	6.0
091	0.0	720	100.0
092	0.0	720	100.0
093	0.0	720	100.0
094	0.0	720	100.0
095	0.0	720	100.0
096	0.0	720	100.0
097	0.0	703	97.6
	1.00	17	2.4
098	0.0	709	98.5
	1.00	11	1.5
099	0.0	708	98.3
	1.00	12	1.7
100	0.0	688	95.6
	1.00	32	4.4

Variable	Value	Absolute Frequency	Relative Frequency Percent
VAR 101	0.0	688	95.6
	1.00	32	4.4
102	0.0	704	97.8
	1.00	16	2.2
103	0.0	717	99.6
	1.00	3	0.4

TABLE 3: INPUT CONDITIONS RESPONSIBLE FOR THE PRODUCTION OF OUTPUT ATTRIBUTES

Polar Support Fracture 006

Experiment Number	F	I	H	M	T
36	1	3	2	3	2
37	1	3	3	1	
38	1	3	3	2	
39	1	3	3	3	
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
61	2	1	3	1	
64	2	1	4	1	
65	2	1	4	2	
85	2	3	3	1	
86	2	3	3	2	
88	2	3	4	1	
89	2	3	4	2	
90	2	3	4	3	
109	3	1	3	1	
110	3	1	3	2	
112	3	1	4	1	
113	3	1	4	2	
133	3	3	3	1	
134	3	3	3	2	
136	3	3	4	1	
137	3	3	4	2	
138	3	3	4	3	

Corner Support Fracture 007

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
43	1	3	5	1	
45	1	3	5	3	
47	1	3	6	2	
48	1	3	6	3	
71	2	1	6	2	
72	2	1	6	3	
91	2	3	5	1	
92	2	3	5	2	
94	2	3	6	1	
95	2	3	6	2	
96	2	3	6	3	
116	3	1	5	2	
142	3	3	6	1	
143	3	3	6	2	

Fracture Directly Under Impact 008

Experiment Number	F	I	H	M	T
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2
37	1	3	3	1	
38	1	3	3	2	
39	1	3	3	3	
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
46	1	3	6	1	
47	1	3	6	2	
48	1	3	6	3	
55	2	1	2	1	1
57	2	1	2	3	1
58	2	1	2	1	2
59	2	1	2	2	2
60	2	1	2	3	2
64	2	1	4	1	
65	2	1	4	2	
68	2	1	5	2	
70	2	1	6	1	
71	2	1	6	2	
72	2	1	6	3	
79	2	3	2	1	1
80	2	3	2	2	1
81	2	3	2	3	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
85	2	3	3	1	
86	2	3	3	2	
87	2	3	3	3	
88	2	3	4	1	
89	2	3	4	2	
90	2	3	4	3	
91	2	3	5	1	
94	2	3	6	1	
95	2	3	6	2	
104	3	1	2	2	1
105	3	1	2	3	1
107	3	1	2	2	2
108	3	1	2	3	2
109	3	1	3	1	
110	3	1	3	2	

Fracture Directly Under Impact 008, cont'd.

Experiment Number	F	I	H	M	T
112	3	1	4	1	
113	3	1	4	2	
114	3	1	4	3	
115	3	1	5	1	
116	3	1	5	2	
118	3	1	6	1	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
133	3	3	3	1	
134	3	3	3	2	
135	3	3	3	3	
136	3	3	4	1	
137	3	3	4	2	
138	3	3	4	3	
139	3	3	5	1	
142	3	3	6	1	
143	3	3	6	2	

Face of Ring Crack Occurrence 009

Experiment Number	F	I	H	M	T
37	1	3	3	1	
38	1	3	3	2	
39	1	3	3	3	
48	1	3	6	3	

Primary Ring Crack Circumference 010

Experiment Number	F	I	H	M	T
37	1	3	3	1	
38	1	3	3	2	
39	1	3	3	3	
41	1	3	4	2	
48	1	3	6	3	
64	2	1	4	1	
66	2	1	4	3	
74	2	3	1	2	1
75	2	3	1	3	1
76	2	3	1	1	2

Primary Ring Crack Circumference 010, cont'd.

Experiment Number	F	I	H	M	T
77	2	3	1	2	2
78	2	3	1	3	2
79	2	3	2	1	1
83	2	3	2	2	2
85	2	3	3	1	
86	2	3	3	2	
87	2	3	3	3	
114	3	1	4	3	
125	3	3	1	2	2
126	3	3	1	3	2
134	3	3	3	2	
135	3	3	3	3	

Secondary Ring Crack Circumference 011

Experiment Number	F	I	H	M	T
66	2	1	4	3	
87	2	3	3	3	
114	3	1	4	3	
134	3	3	3	2	

Primary Ring Crack Diameter 012

Experiment Number	F	I	H	M	T
37	1	3	3	1	
39	1	3	3	3	
41	1	3	4	2	
66	2	1	4	3	
77	2	3	1	2	2
78	2	3	1	3	2
85	2	3	3	1	
114	3	1	4	3	
125	3	3	1	2	2
134	3	3	3	2	

Primary Incipient Half Cone 013

Experiment Number	F	I	H	M	T
40	1	3	4	1	
64					
86	2	3	3	2	
87	2	3	3	3	
89	2	3	4	2	
139	3	3	5	1	

Primary Incipient Whole Cone 014

Experiment Number	F	I	H	M	T
85	2	3	3	1	
89	2	3	4	2	
92	2	3	5	2	
109	3	1	3	1	
110	3	1	3	2	
133	3	3	3	1	
134	3	3	3	2	
137	3	3	4	2	

Primary Whole Cone 015

Experiment Number	F	I	H	M	T
86	2	3	3	2	
91	2	3	5	1	
118	3	1	6	1	
133	3	3	3	1	
139	3	3	5	1	

Secondary Half Cone 018

Experiment Number	F	*	H	M	T
47	1	3	6	2	
71	2	1	6	2	

Lips 020

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2
59	2	1	2	2	2
60	2	1	2	3	2
64	2	1	4	1	
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
104	3	1	2	2	1
105	3	1	2	3	1

Lips 020, cont'd.

Experiment Number	F	I	H	M	T
107	3	1	2	2	2
108	3	1	2	3	2
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
131	3	3	2	2	2

Primary Incipient and Partially Complete Conoid Fracture 021

Experiment Number	F	I	H	M	T
47	1	3	6	2	
55	2	1	2	1	1
57	2	1	2	3	1

Primary Flake Bulbs 022

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
59	2	1	2	2	2
60	2	1	2	3	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
104	3	1	2	2	1
105	3	1	2	3	1
107	3	1	2	2	2
108	3	1	2	3	2
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
135	3	3	3	3	

Primary Flake Hackle Marks Adjacent to Point of Impact 023

Experiment Number	F	I	H	M	T
34	1	3	2	1	2

Primary Flake Hackle Marks on Lateral Edge of Rib 024

Experiment Number	F	I	H	M	T
83	2	3	2	2	2

Primary Flake Hackle Marks on Ribs 025

Experiment Number	F	I	H	M	T
34	1	3	2	1	2
35	1	3	2	2	2
64	2	1	4	1	
104	3	1	2	2	1
112	3	1	4	1	
127	3	3	2	1	1
130	3	3	2	1	2

Primary Flake Hackle Marks at Distal End 026

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
34	1	3	2	1	2
59	2	1	2	2	2
83	2	3	2	2	2

Primary Flake Ribs Concentric to Point of Origin 027

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
34	1	3	2	1	2
35	1	3	2	2	2

Primary Flake Ribs Semi-Circular to Point of Origin 028

Experiment Number	F	I	H	M	T
41	1	3	4	2	
55	2	1	2	1	1
59	2	1	2	2	2
64	2	1	4	1	
65	2	1	4	2	
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
89	2	3	4	2	

Primary Flake Ribs Semi-Circular to Point of Origin 028, cont'd.

Experiment Number	F	I	H	M	T
104	3	1	2	2	1
107	3	1	2	2	2
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
130	3	3	2	1	2
131	3	3	2	2	2
133	3	3	3	1	
136	3	3	4	1	

Primary Flake Eraillures 029

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
34	1	3	2	1	2
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
112	3	1	4	1	
127	3	3	2	1	1
128	3	3	2	2	1

Primary Flake Hinge at Distal End 030

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
64	2	1	4	1	
82	2	3	2	1	2
89	2	3	4	2	
108	3	1	2	3	2
112	3	1	4	1	

Primary Flake Step at Distal End 031

Experiment Number	F	I	H	M	T
33	1	3	2	3	1
42	1	3	4	3	
84	2	3	2	3	2
89	2	3	4	2	
90	2	3	4	3	
105	3	1	2	3	1
108	3	1	2	3	2
112	3	1	4	1	
113	3	1	4	1	
130	3	3	2	1	2

Primary Flake Feathers Out at Distal End 032

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2
55	2	1	2	1	1
57	2	1	2	3	1
58	2	1	2	1	2
59	2	1	2	2	2
60	2	1	2	3	2
65	2	1	4	2	
79	2	3	2	1	1
80	2	3	2	2	1
81	2	3	2	3	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
87	2	3	3	3	
104	3	1	2	2	1
107	3	1	2	2	2
108	3	1	2	3	2
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
136	3	3	4	1	

Primary Flake Jagged and Irregular at Distal End 034

Experiment Number	F	I	H	M	T
41	1	3	4	2	
135	3	3	3	3	

Primary Flake Length 035

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2

Primarylake Length 035, cont'd.

Experiment Number	F	I	H	M	T
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
55	2	1	2	1	1
57	2	1	2	3	1
58	2	1	2	1	2
59	2	1	2	2	2
60	2	1	2	3	2
64	2	1	4	1	
65	2	1	4	2	
79	2	3	2	1	1
80	2	3	2	2	1
81	2	3	2	3	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
87	2	3	3	3	
89	2	3	4	2	
90	2	3	4	3	
104	3	1	2	2	1
105	3	1	2	3	1
107	3	1	2	2	2
108	3	1	2	3	2
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
135	3	3	3	3	
136	3	3	4	1	

Primary Flake Width 036

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2

Primary Flake Width 036, cont'd.

Experiment Number	F	I	H	M	T
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
55	2	1	2	1	1
57	2	1	2	3	1
58	2	1	2	1	2
59	2	1	2	2	2
60	2	1	2	3	2
64	2	1	4	1	
65	2	1	4	2	
79	2	3	2	1	1
80	2	3	2	2	1
81	2	3	2	3	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
87	2	3	3	3	
89	2	3	4	2	
90	2	3	4	3	
104	3	1	2	2	1
105	3	1	2	3	1
107	3	1	2	2	2
108	3	1	2	3	2
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
135	3	3	3	3	
136	3	3	4	1	

Cone Segments 038

Experiment Number	F	I	H	M	T
71	2	1	6	2	
89	2	3	4	2	
133	3	3	3	1	
137	3	3	4	2	

Conoid Fracture Reversal 039

Experiment Number	F	I	H	M	T
47	1	3	6	2	

Conoid Fracture Reversal 039, cont'd.

Experiment Number	F	I	H	M	T
59	2	1	2	2	2
70	2	1	6	1	
112	3	1	4	1	
115	3	1	5	1	
116	3	1	5	2	
132	3	3	2	3	2
133	3	3	3	1	
142	3	3	6	1	
143	3	3	6	2	

Primary Flake Shape 040

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
46	1	3	6	1	
55	2	1	2	1	1
57	2	1	2	3	1
58	2	1	2	1	2
59	2	1	2	2	2
60	2	1	2	3	2
64	2	1	4	1	
65	2	1	4	2	
79	2	3	2	1	1
80	2	3	2	2	1
81	2	3	2	3	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
87	2	3	3	3	
89	2	3	4	2	
90	2	3	4	3	
94	2	3	6	1	
95	2	3	6	2	
104	3	1	2	2	1
105	3	1	2	3	1
107	3	1	2	2	2

Primary Flake Shape 040, cont'd.

Experiment Number	F	I	H	M	T
108	3	1	2	3	2
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
135	3	3	3	3	
136	3	3	4	1	

Secondary Flake Length 041

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
42	1	3	4	3	
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
107	3	1	2	2	2
112	3	1	4	1	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	1	2
132	3	3	2	3	2
136	3	3	4	1	

Secondary Flake Width 042

Experiment Number	F	I	H	M	T
35	1	3	2	2	2
42	1	3	4	3	
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1

Secondary Flake Width 042, cont'd.

Experiment Number	F	I	H	M	T
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
107	3	1	2	2	2
112	3	1	4	1	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
131	3	3	2	2	2
132	3	3	2	3	2
136	3	3	4	1	

Secondary Flake Bulb 043

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
83	2	3	2	2	2
104	3	1	2	2	1
107	3	1	2	2	2
128	3	3	2	2	1
129	3	3	2	3	1
131	3	3	2	2	2
136	3	3	4	1	

Secondary Flake Hackle Marks on Ribs 046

Experiment Number	F	I	H	M	T
35	1	3	2	2	2
59	2	1	2	2	2
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
130	3	3	2	1	2

Secondary Flake Hackle Marks on Distal End 047

Experiment Number	F	I	H	M	T
59	1	3	6	2	
83	2	3	2	2	2

Secondary Flake Hackle Marks on Distal End 047, cont'd.

Experiment Number	F	I	H	M	T
112	3	1	4	1	
132	3	3	2	3	2

Secondary Flake Ribs Concentric to Point of Origin 048

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
79	2	3	2	1	1

Secondary Flake Ribs Semi-Circular to Point of Origin 049

Experiment Number	F	I	H	M	T
35	1	3	2	2	2
58	2	1	2	1	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
107	3	1	2	2	2
112	3	1	4	1	
127	3	3	2	1	1
128	3	3	2	2	1
130	3	3	2	1	2
131	3	3	2	2	2
136	3	3	4	1	

Secondary Flake Eraillures 050

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
59	2	1	2	2	2
80	2	3	2	2	1
83	2	3	2	2	2
104	3	1	2	2	1

Secondary Flake Hinge at Distal End 051

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
59	2	1	2	2	2

Secondary Flake Step at Distal End 052

Experiment Number	F	I	H	M	T
59	2	1	1	1	2
104	3	1	2	2	1
130	3	3	2	1	2

Secondary Flake Feathers at Distal End 053

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
105	3	1	2	3	1
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
136	3	3	4	1	

Secondary Flake Shape 056

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
41	1	3	4	2	
42	1	3	4	3	
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
87	2	3	3	3	
104	3	1	2	2	1
107	3	1	2	2	2
112	3	1	4	1	
127	3	3	2	1	1

Secondary Flake Shape 056, cont'd.

Experiment Number	F	I	H	M	T
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2

Incipient Flakes 057

Experiment Number	F	I	H	M	T
33	1	3	2	3	1
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
65	2	1	4	2	
80	2	3	2	2	1
87	2	3	3	3	
88	2	3	4	1	
90	2	3	4	3	
104	3	1	2	2	1
109	3	1	3	1	
112	3	1	4	1	
135	3	3	3	3	
136	3	3	4	1	

Incipient Flake Face 058

Experiment Number	F	I	H	M	T
33	1	3	2	3	1
39	1	3	3	3	
41	1	3	4	2	
42	1	3	4	3	
65	2	1	4	2	
80	2	3	2	2	1
88	2	3	4	1	
90	2	3	4	3	
104	3	1	2	2	1
109	3	1	3	1	
112	3	1	4	1	
135	3	3	3	3	
136	3	3	4	1	

Beveled Face with Microflaking Along but Outside of Negative Scar 059

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
34	1	3	2	1	2
35	1	3	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
127	3	3	2	1	1
128	3	3	2	2	1
131	3	3	2	2	2

Internal Failure at a Flaw or Bedding Plane 060

Experiment Number	F	I	H	M	T
33	1	3	2	3	1
69	2	1	5	3	
72	2	1	6	3	
81	2	3	2	3	1
87	2	3	3	3	
111	3	1	3	3	

Secondary Flake Lip 061

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
59	2	1	2	2	
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
87	2	3	3	3	
104	3	1	2	2	
107	3	1	2	2	2
128	3	3	2	2	1
129	3	3	2	3	1

Negative Cone Segments 062

Experiment Number	F	I	H	M	T
40	1	3	4	1	
86	2	3	3	2	
88	2	3	4	1	
89	2	3	4	2	
133	3	3	3	1	

Negative Cone Segments 062, cont'd.

Experiment Number	F	I	H	M	T
134	3	3	3	2	
136	3	3	4	1	
137	3	3	4	2	

Primary Flake Outré Passé 063

Experiment Number	F	I	H	M	T
133	3	3	3	1	

Secondary Flake Outré Passé 064

Experiment Number	F	I	H	M	T
112	3	1	4	1	

Secondary Incipient and Partially Complete Conoid Fracture 065

Experiment Number	F	I	H	M	T
143	3	3	6	2	

Secondary Ring Crack Diameter 066

Experiment Number	F	I	H	M	T
87	2	3	3	3	

Frequency Distribution of Completed Radial Cracks on Edge Number 1 067

Experiment Number	F	I	H	M	T
43	1	3	5	1	
44	1	3	5	2	
45	1	3	5	3	
67	2	1	5	1	
68	2	1	5	2	
91	2	3	5	1	
92	2	3	5	2	
118	3	1	6	1	
119	3	1	6	2	
120	3	1	6	3	
139	3	3	5	1	
140	3	3	5	2	

Frequency Distribution of Completed Radial Cracks on Edge Number 2 068

Experiment Number	F	I	H	M	T
43	1	3	5	1	
44	1	3	5	2	
45	1	3	5	3	
48	1	3	6	3	
67	2	1	5	1	
68	2	1	5	2	
69	2	1	5	3	
72	2	1	6	3	
91	2	3	5	1	
92	2	3	5	2	
96	2	3	6	3	
118	3	1	6	1	
119	3	1	6	2	
120	3	1	6	3	
121	3	3	1	1	
139	3	3	5	1	
140	3	3	5	2	
141	3	3	5	3	

Frequency Distribution of Completed Radial Cracks on Edge Number 3 069

Experiment Number	F	I	H	M	T
43	1	3	5	1	
44	1	3	5	2	
45	1	3	5	3	
48	1	3	6	3	
67	2	1	5	1	
68	2	1	5	2	
69	2	1	5	3	
72	2	1	6	3	
91	2	3	5	1	
92	2	3	5	2	
118	3	1	6	1	
119	3	1	6	2	
139	3	3	5	1	
140	3	3	5	2	

Frequency Distribution of Completed Radial Cracks on Edge Number 4 070

Experiment Number	F	I	H	M	T
43	1	3	5	1	
44	1	3	5	2	
45	1	3	5	3	
48	1	3	6	3	
67	2	1	5	1	

Frequency Distribution of Completed Radial Cracks on Edge Number 4 070, cont'd.

Experiment Number	F	I	H	M	T
68	2	1	5	2	
69	2	1	5	3	
72	2	1	6	3	
91	2	3	5	1	
92	2	3	5	2	
96	2	3	6	3	
117	3	1	5	3	
118	3	1	6	1	
119	3	1	6	2	
120	3	1	6	3	
139	3	3	5	1	
140	3	3	5	2	
141	3	3	5	3	

Pressure Flakes Induced by Vise 071

Experiment Number	F	I	H	M	T
104	3	1	2	2	1
130	3	3	2	1	2
131	3	3	2	2	2

Fracture by Flexure or Bending--Present Under Impact 072

Experiment Number	F	I	H	M	T
43	1	3	5	1	
44	1	3	5	2	
45	1	3	5	3	
48	1	3	6	3	
67	2	1	5	1	
68	2	1	5	2	
69	2	1	5	3	
72	2	1	6	3	
91	2	3	5	1	
92	2	3	5	2	
96	2	3	5	3	
117	3	1	5	3	
118	3	1	6	1	
119	3	1	6	2	
120	3	1	6	3	
139	3	3	5	1	
140	3	3	5	2	
141	3	3	5	3	

Fracture by Flexure or Bending--Radial Fracture Initiated from One Point of Bottom of Compressed Cone 074

Experiment Number	F	I	H	M	T
44	1	3	5	2	
45	1	3	5	3	
68	2	1	5	2	
92	2	3	5	2	
139	3	3	5	1	

Fracture by Flexure or Bending--Radial Fracture Initiated from Bottom Edge of Half Cone 075

Experiment Number	F	I	H	M	T
47	1	3	6	2	
48	1	3	6	3	
91	2	3	5	1	

Primary Negative Flake Scar--Microflaking 076

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2
37	1	3	3	1	
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
46	1	3	6	1	
48	1	3	6	3	
49	2	1	1	1	
58	2	1	2	1	2
64	2	1	4	1	
65	2	1	4	2	
79	2	3	2	1	1
84	2	3	2	3	2
88	2	3	4	1	
89	2	3	4	2	
90	2	3	4	3	
105	3	1	2	3	1
107	3	1	2	2	2
108	3	1	2	3	2
112	3	1	4	1	
113	3	1	4	2	
116	3	1	5	2	

Primary Negative Flake Scar--Microflaking 076, cont'd.

Experiment Number	F	I	H	M	T
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
135	3	3	3	3	
136	3	3	4	1	
138	3	3	4	3	

Primary Negative Flake Scar--Crushing 077

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
48	1	3	6	3	
55	2	1	2	1	1
57	2	1	2	3	1
58	2	1	2	1	2
60	2	1	2	3	2
64	2	1	4	1	
79	2	3	2	1	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
87	2	3	3	3	
88	2	3	4	1	
89	2	3	4	2	
90	2	3	4	3	
105	3	1	2	3	1
107	3	1	2	2	2
108	3	1	2	3	2
112	3	1	4	1	
113	3	1	4	2	
115	3	1	5	1	
127	3	3	2	1	1
128	3	3	2	2	1

Primary Negative Flake Scar--Crushing 077, cont'd.

Experiment Number	F	I	H	M	T
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
133	3	3	3	1	
135	3	3	3	3	
136	3	3	4	1	
138	3	3	4	3	

Primary Flake Platform Alterations--Pitting 078

Experiment Number	F	I	H	M	T
133	3	3	3	1	

Primary Flake Platform Alterations--Scratching 079

Experiment Number	F	I	H	M	T
87	2	3	3	3	
88	2	3	4	1	

Primary Flake Platform Alterations--Crushing 080

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
34	1	3	2	1	2
35	1	3	2	2	2
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
47	1	3	6	2	
48	1	3	6	3	
58	2	1	2	1	2
82	2	3	2	1	2
84	2	3	2	3	2
85	2	3	3	1	
88	2	3	4	1	
89	2	3	4	2	
90	2	3	4	3	
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1

Primary Flake Platform Alterations--Crushing 080, cont'd.

Experiment Number	F	I	H	M	T
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
135	3	3	3	3	
136	3	3	4	1	
137	3	3	4	2	
138	3	3	4	3	

Primary Flake Platform Alterations--Microcracks 081

Experiment Number	F	I	H	M	T
35	1	3	2	2	2
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
48	1	3	6	3	
58	2	1	2	1	2
65	2	1	4	2	
79	2	3	2	1	1
82	2	3	2	1	2
84	2	3	2	3	2
88	2	3	4	1	
89	2	3	4	2	
90	2	3	4	3	
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
133	3	3	3	1	
135	3	3	3	3	
136	3	3	4	1	
138	3	3	4	3	

Primary Flake Platform Alterantions--Mictoflaking 082

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	

Primary Flake Platform Alterations--Microflaking 082, cont'd.

Experiment Number	F	I	H	M	T
48	1	3	6	3	
58	2	1	2	1	2
82	2	3	2	1	2
84	2	3	2	3	2
88	2	3	4	1	
89	2	3	4	2	
90	2	3	4	3	
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
131	3	3	2	2	2
132	3	3	2	3	2
135	3	3	3	3	
136	3	3	4	1	
138	3	3	4	3	
142	3	3	6	1	

Primary Half Cone 083

Experiment Number	F	I	H	M	T
46	1	3	6	1	
47	1	3	6	2	
48	1	3	6	3	
70	2	1	6	1	
71	2	1	6	2	
72	2	1	6	3	
88	2	3	4	1	
94	2	3	6	1	
95	2	3	6	2	
115	3	1	5	1	
116	3	1	5	2	
143	3	3	6	2	

Primary Half Cone--Incomplete 084

Experiment Number	F	I	H	M	T
68	2	1	5	2	
88	2	3	4	1	
95	2	3	6	2	
116	3	1	5	2	
119	3	1	6	2	
136	3	3	4	1	

Primary Face of Flake Long Axis--X 085

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
33	1	3	2	3	1
34	1	3	2	1	2
35	1	3	2	2	2
36	1	3	2	3	2
40	1	3	4	1	
41	1	3	4	2	
42	1	3	4	3	
55	2	1	2	1	1
57	2	1	2	3	1
58	2	1	2	1	2
59	2	1	2	2	2
60	2	1	2	3	2
64	2	1	4	1	
65	2	1	4	2	
79	2	3	2	1	1
80	2	3	2	2	1
81	2	3	2	3	1
82	2	3	2	1	2
83	2	3	2	2	2
84	2	3	2	3	2
87	2	3	3	3	
89	2	3	4	2	
90	2	3	4	3	
104	3	1	2	2	1
105	3	1	2	3	1
107	3	1	2	2	2
108	3	1	2	3	2
112	3	1	4	1	
113	3	1	4	2	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
135	3	3	3	3	
136	3	3	4	1	

Secondary Flake Face of Long Axis 090

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2

Secondary Flake Face of Long Axis 090, cont'd.

Experiment Number	F	I	H	M	T
42	1	3	4	3	
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
107	3	1	2	2	2
112	3	1	4	1	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
136	3	3	4	1	

Secondary Flake Platform Alterations--Crushing 097

Experiment Number	F	I	H	M	T
35	1	3	2	2	2
42	1	3	4	3	
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
112	3	1	4	1	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2

Secondary Flake Platform Alterations--Microcracks 098

Experiment Number	F	I	H	M	T
35	1	3	2	2	2
58	2	1	2	1	2
82	2	3	2	1	2
112	3	1	4	1	
127	3	3	2	1	1

Secondary Flake Platform Alterations--Microcracks 098, cont'd.

Experiment Number	F	I	H	M	T
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2

Secondary Flake Platform Alterations--Microflaking 099

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
58	2	1	2	1	2
82	2	3	2	1	2
112	3	1	4	1	
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2

Secondary Flake Negative Scar Alterations--Microflaking 100

Experiment Number	F	I	H	M	T
32	1	3	2	2	1
35	1	3	2	2	2
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
105	3	1	2	3	1
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
136	3	3	4	1	

Secondary Flake Negative Scar Alterations--Crushing 101

Experiment Number	F	I	H	M	T
35	1	3	2	2	2
42	1	3	4	3	

Secondary Flake Negative Scar Alterations--Crushing 101, Cont'd.

Experiment Number	F	I	H	M	T
58	2	1	2	1	2
59	2	1	2	2	2
79	2	3	2	1	1
80	2	3	2	2	1
82	2	3	2	1	2
83	2	3	2	2	2
104	3	1	2	2	1
107	3	1	2	2	2
127	3	3	2	1	1
128	3	3	2	2	1
129	3	3	2	3	1
130	3	3	2	1	2
131	3	3	2	2	2
132	3	3	2	3	2
136	3	3	4	1	

Face of Negative Cone Segments X Face 102

Experiment Number	F	I	H	M	T
40	1	3	4	1	
86	2	3	3	2	
88	2	3	4	1	
89	2	3	4	2	
133	3	3	3	1	
134	3	3	3	2	
136	3	3	4	1	
137	3	3	4	2	

Face of Negative Cone Segments Both X Faces 103

Experiment Number	F	I	H	M	T
134	3	1	2	1	1
137	3	3	4	2	